

CHAPTER WISE

MOST PROBABLE QUESTIONS WITH ANSWERS

M C Q

CORRELATION & REGRESSION

- If the correlation coefficient between X and Y is r then the correlation coefficient between $2X$ and $2Y$ will be:
 - $2r$
 - r^2
 - $r + 2$
 - None of these

Ans. (d) None of these
- The value of correlation coefficient computed by a student is 1.35. Which of the following can be concluded?
 - There is very high correlation between the variables.
 - The data is incorrect
 - The calculation is incorrect
 - Variables are moderately correlated

Ans. (c) The calculation is incorrect
- The method suitable for studying the correlation between qualification and efficiency is:
 - Karl Pearson's method
 - Rank correlation method
 - Graphical method
 - Correlation cannot be found out

Ans. (b) Rank correlation method
- X and Y are negatively correlated means:
 - Values of both the variables change in the same direction
 - Changes in the values of X does not affect the values of Y
 - If X decreases then y increases
 - If x decreases the Y decreases

Ans. (c) If X decreases then Y increases
- If one of the regression coefficients is larger than 1 then the other regression coefficient is smaller than 1.
 - True
 - False
 - Cannot be said
 - None of these

Ans. (a) True
- The sum of the ranks of all the n observations according to an attribute must be :
 - 0
 - $\frac{n(n+1)}{2}$
 - $2n$
 - $\frac{n(n+1)(2n+1)}{6}$

Ans. (b) $\frac{n(n+1)}{2}$
- If a scatter diagram shows a general tendency to move from the left hand top corner towards the right hand bottom corner, the correlation is:
 - Positive correlation
 - Negative correlation
 - No correlation
 - Zero correlation

Ans. (b) Negative correlation
- The ranks of 5 observations A, B, C, D, E according to attributes X and Y are 1, 2, 3, 4, 5 and 5, 4, 3, 2, 1 respectively. The rank correlation coefficient will be:
 - +1
 - 0
 - 1
 - None of these

Ans. (c) - 1
- X and Y are positively correlated. If each value of X is increased by 3 and each value of Y is decreased by 3 then the type of correlation between the new sets of values will be:
 - Positive correlation
 - No correlation
 - Negative correlation
 - Perfect negative correlation

Ans. (a) Positive correlation

10. If the points of a scatter diagram lie on a straight line that makes an angle of 75° with the positive X-axis, the variables have:

- (a) No correlation
- (b) Zero correlation
- (c) Perfect positive correlation
- (d) Positive correlation

Ans. (d) Positive correlation

11. If X and y are independent, $X + Y$ and $X - Y$ are also independent.

- (a) True
- (b) False
- (c) Cannot be said
- (d) None of these

Ans. (b) False

12. X and Y have minimum correlation means:

- (a) $r = 0$
- (b) $r = -1$
- (c) r has no minimum value
- (d) None of these

Ans. (a) $r = 0$

13. The value of correlation coefficient cannot be:

- (a) Greater than 0
- (b) Between 0 and 1
- (c) Less than 0
- (d) Less than -1

Ans. (d) Less than -1

14. If the slope of the line of regression of Y on X is -0.25 then the range for the regression coefficient of X on Y will be:

- (a) [0, 1]
- (b) (-1, 0)
- (c) (0, 4]
- (d) [-4, 0)

Ans. (d) [-4, 0)

15. If there is only one line of regression, then:

- (a) Correlation coefficient between X and Y is 0
- (b) X and Y are perfectly correlated
- (c) $r_{xy} = +1$
- (d) None of these

Ans: (b) X and Y are perfectly correlated

16. Simple correlation coefficient indicates:

- (a) Only linear relationship
- (b) All types of relationship
- (c) Independence between the variables
- (d) None of these

Ans. (a) Only linear relationship

17. If a line of regression is parallel to the X-axis then it is the line of regression of :

- (a) X on Y
- (b) Y on X

(c) It is impossible that a line of regression will be parallel to an axis

(d) None of these

Ans. (b) Y on X

18. If a bivariate data has only one line of regression, the coefficient of determination is:

- (a) -1
- (b) +1
- (c) 0
- (d) None of these

Ans. (b) +1

19. If correlation coefficient between X and Y is 0 then what can be concluded?

- (a) The variables have no relation
- (b) The variables are independent
- (c) There is no association between X and Y
- (d) X and Y are not linearly related

Ans. (d) X and Y are not linearly related

20. If the correlation coefficient between X and Y is 0 then the two lines of regression will be:

- (a) Coinciding with each other
- (b) Parallel to each other
- (c) Perpendicular to each other
- (d) None of these

Ans. (c) Perpendicular to each other

TIME SERIES ANALYSIS

21. Which of the following is not a method for measurement of trend?

- (a) Moving average method
- (b) Simple average method
- (c) Free hand curve method
- (d) Semi average method

Ans. (b) Simple average method

22. Which of the following is not an example of seasonal variation?

- (a) Increase in the sale of rain wears in the rainy season
- (b) Decrease in the price of agricultural products during the harvesting period
- (c) Increase in the price of land due to onset of an industry
- (d) Occurrence of flood in the coastal areas of Odisha during every rainy season

Ans: (c) Increase in the price of land due to onset of an industry

23. The graph obtained by plotting the observed values of a time series against the points is called:

- (a) Histogram (b) Cartogram
(c) Historigram (d) Pictogram

Ans. (c) Historigram

24. Which of the following methods has the demerit of being influenced by higher values in series?

- (a) Free hand curve method
(b) Moving average method
(c) Least square method
(d) None of these

Ans. (d) None of these

25. For the study of which of the following components, data for a sufficiently long period is needed?

- (a) Random component (b) Cyclical component
(c) Secular trend (d) None of these

Ans. (c) Secular trend

26. By which of the following methods, a second degree trend can be fitted to a time series:

- (a) Semi average method
(b) Least square method
(c) Graphical method
(d) None of these

Ans. (b) Least square method

27. What is the general equation of a second degree trend?

- (a) $y^2 = at + b$ (b) $y = a + ct^2$
(c) $y = a + bt + ct^2$ (d) $yt = a + bt^2$

Ans. (c) $y = a + bt + ct^2$

28. Analysis of time series can be used for: (I) Making future plans; (II) Forecasting; (III) Evaluating current achievements

- (a) Only I is true
(b) Only II and III are true
(c) Only II is true
(d) All of them are true

Ans. (d) All of them are true

29. Which of the following is not a stage of a business cycle?

- (a) Recession (b) Recovery
(c) Randomization (d) Prosperity

Ans. (c) Randomization

30. Which of the following time series does not contain seasonal variations?

- (a) Month wise production of cement in a factory for 3 years
(b) Daily withdrawal from a bank for 6 months
(c) Yearly sales of a business house for a period of 10 years
(d) Daily circulation of a news paper for one year

Ans. (c) Yearly sales of a business house for a period of 10 years

31. Which of the following components is caused from social activities:

- (a) Cyclical component (b) Seasonal component
(c) Trend component (d) None of these

Ans. (b) Seasonal component

32. Which of the following is a demerit of the least square method?

- (a) It can provide linear as well as non-linear trend
(b) It uses data completely
(c) It is not flexible
(d) It provides the trend as a function of time

Ans. (c) It is not flexible

33. Which of the following is not a time series?

- (a) Daily maximum temperature recorded at Bhubaneswar for one month
(b) Monthly sales of an ice-cream parlour for two years
(c) Hourly temperature of a patient for one day
(d) Annual production of steel in five different steel plants for the year 2016

Ans. (d) Annual production of steel in five different steel plants for the year 2016

34. How many normal equations are to be solved in order to fit a linear trend?

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

Ans. (c) 2

35. Which method pre-assumes a linear trend?

- (a) Free hand curve method
(b) Least square method
(c) Semi average method
(d) None of these

Ans. (c) Semi average method

36. If most of the points of the histogram show a tendency of movement from the left hand top corner towards the right hand bottom corner of the plane, the trend is:

- (a) Oscillating
- (b) Increasing
- (c) Decreasing
- (d) None of these

Ans. (d) Decreasing

37. The data on annual sale of Maruti cars is available for the period from 2001 to 2015. Which of the following component is not present in this time series?

- (a) Seasonal variation
- (b) Random component
- (c) Cyclical fluctuation
- (d) Long term component

Ans. (a) Seasonal variation

38. Which of the following is a merit of semi-average method over free hand curve method?

- (a) It gives only linear trend
- (b) The trend is unduly influenced by higher values in the series
- (c) It is an objective method
- (d) It is easy to apply

Ans. (c) It is an objective method

39. Which of the following time series can contain Cyclical fluctuation ?

- (a) Annual result of College for 10 years.
- (b) Score of a cricket player in last 5 years.
- (c) Annual number of road accidents in Odisha for the last 5 years.
- (d) Yearly sales of a steel plant for a period of 15 years.

Ans. (d) Yearly sales of a steel plant for a period of 15 years.

40. Earthquake is an example of -

- (a) Trend Component
- (b) Random Component
- (c) Seasonal Component
- (d) None of these

Ans. (b) Random Component

INDEX NUMBER

41. Which of the following is not a characteristic for selection of commodities?

- (a) It should be stable in quality
- (b) It should be a commonly used commodity

- (c) The number of commodities should be neither very large nor very small
- (d) None of these

Ans. (d) None of these

42. What is the relationship among Laspeyre's, Paasche's and Fisher's Ideal index numbers?

- (a) They are always equal
- (b) Fisher's index is the AM of Laspeyre's and Paasche's index
- (c) Fisher's index must lie between Laspeyre's and Paasche's index
- (d) None of these

Ans. (c) Fisher's index must lie between Laspeyre's and Paasche's index

43. Which of the following formula does not satisfy TRT?

- (a) Simple aggregative method
- (b) Simple GM of relatives method
- (c) Fisher's ideal method
- (d) Simple AM of relatives method

Ans. (d) Simple AM of relatives method

44. Which method uses current years's quantity ?

- (a) Paasche's method
- (b) Fisher's ideal method
- (c) Weighted GM of relatives method
- (d) Laspeyre's method

Ans. (a) Paasche's method

45. Which of the following is not a characteristic of an ideal base year?

- (a) It should not be a leap year
- (b) It should be year with normal price level
- (c) It should be free from war
- (d) It should not be far away from the base year

Ans : (a) It should not be a leap year

46. Current year's quantity is used as weights for:

- (a) Weighted average of relatives index
- (b) Laspeyre's index
- (c) Fisher's Ideal index
- (d) Paasche's index

Ans. (d) Paasche's index

47. What is the unit of price relative in India?

- (a) Rupees
- (b) Dollar
- (c) No unit
- (d) None of these

Ans. (c) No unit

48. In Laspeyre's method, weight of a commodity is:
- Quantity consumed in the current year
 - Quantity consumed in the base year
 - Value of the commodity in the base year
 - Value of the commodity in the preceding year

Ans. (b) Quantity consumed in the base year

49. Who suggested Time Reversal Test?

- Laspeyre
- Paasche
- Kelly
- None of these

Ans. (d) None of these

50. Which of the following methods is most suitable to compare the price level of 2019 with 1950?

- Fixed base method
- Chain base method
- Cannot be compared
- None of these

Ans. (b) Chain base method

51. What is the unit of price relative ?

- Rupees
- Dollar
- No unit
- Quintal

Ans. (c) No unit

52. Which of the following average is the most suitable for computation of index number?

- Median
- Harmonic mean
- Arithmetic mean
- Geometric mean

Ans. (d) Geometric mean

53. Which index number under estimates the relative change ?

- Simple aggregative index
- Paasche's index
- Fisher's index
- Weighted AM of relatives index

Ans. (b) Paasche's index

54. Which of the following index number formulae does not satisfy circular test?

- Simple GM of relatives method
- Fisher's Ideal method
- Simple aggregative method
- None of these

Ans. (b) Fisher's Ideal method

55. Which of the following is not a step in the construction of wholesale price index number?

- Selection of average
- Collection of price quotation
- Conducting a family budget enquiry
- None of these

Ans. (c) Conducting a family budget enquiry

56. The simplest form of a price index is :

- Laspeyre's index
- A price relative
- A quantity index
- Fisher's ideal index

Ans. (b) A price relative

57. The index number likely to have an upward bias is:

- Laspeyre's index
- Paasche's index
- Fisher's Ideal index
- Weighted GM of relatives index

Ans. (a) Laspeyre's index

58. What is the use of chain base index?

- It is used to compare the current year with a far away base year
- It is used to compare the current year with a recent past year
- It is used for computation of the real value
- None of these

Ans. (a) It is used to compare the current year with a far away base year

59. Which of the following is the condition for FRT?

$$(a) P_{01} \times P_{10} = \frac{\sum p_1 q_1}{\sum p_0 q_0}$$

$$(b) Q_{01} \times Q_{10} = \frac{\sum p_0 q_0}{\sum p_1 q_1}$$

$$(c) P_{01} \times Q_{10} = \frac{\sum p_0 q_0}{\sum p_1 q_1}$$

$$(d) P_{01} \times Q_{01} = \frac{\sum p_1 q_1}{\sum p_0 q_0}$$

Ans. (d) $P_{01} \times Q_{01} = \frac{\sum p_1 q_1}{\sum p_0 q_0}$

60. Which of the following is not a method of assigning weights to various commodities?

- Quantity weights
- Price weights
- Value weights
- None of these

Ans. (b) Price weights

SAMPLING TECHNIQUES

61. Which of the following methods will be more convenient to select a random sample of 5000 employees out of a total of 30000 employees of an organization?
 (a) Lottery method (b) Judgment method
 (c) Method of using a random number table
 (d) None of these
Ans. (c) Method of using a random number table
62. Which of the following is a parameter?
 (a) Sample variance (b) Sample mean
 (c) Sample proportion (d) None of these
Ans. (d) None of these
63. Which of the following statements is true?
 (a) Census can be done with a small manpower
 (b) Sampling provides a better scope for study
 (c) Sampling is more time taking
 (d) Census is less expensive
Ans. (b) Sampling provides a better scope for study
64. What type of error can be present in complete enumeration?
 (a) Sampling error (b) Non-sampling error
 (c) No error (d) Positive error
Ans. (b) Non-sampling error
65. If all the units of the population are homogeneous, which of the following sampling methods should be the most suitable?
 (a) Simple random sampling
 (b) Systematic sampling
 (c) Non-random sampling
 (d) Stratified random sampling
Ans. (a) Simple random sampling
66. If the population size is N and size of the simple random sample is n then what is the probability of selection of the population unit Y_i into the sample when units are selected with replacement?
 (a) $\frac{1}{N}$ (b) $\frac{1}{n}$
 (c) $\frac{n}{N}$ (d) None of these
Ans. (c) $\frac{n}{N}$
67. Let M be a statistic and Q be a parameter. If $E(M) = Q$ then:
 (a) Q is the unbiased estimate of M
 (b) M is an unbiased estimate of Q
 (c) M and Q are unbiased estimates of each other
 (d) None of these
Ans. (b) M is an unbiased estimate of Q
68. If a population consists of 40000 units, the random numbers that should be rejected are:
 (a) 80000 and above (b) 80001 to 99999
 (c) 1 to 39999 (d) None
Ans. (b) 80001 to 99999
69. What is the mean of the sampling distribution of mean?
 (a) Population mean (b) Population total
 (c) Sample mean (d) None of these
Ans. (a) Population mean
70. In which of the following sampling methods, the probability of selection of every population unit into the sample remains the same?
 (a) Simple random sampling
 (b) Purposive sampling
 (c) Stratified random sampling
 (d) Non-random sampling
Ans. (a) Simple random sampling
71. Under simple random sampling, what is the unbiased estimate of population mean square?
 (a) s^2 (b) S^2
 (c) σ^2 (d) None of these
Ans. (a) s^2
72. Precision of an estimate can be determined in sample surveys.
 (a) True (b) False
 (c) Can't be concluded (d) None of these
Ans. (a) True
73. If a population consists of N units and a sample of n units is to be drawn from it without replacement; what is the number of possible samples that contain a specific population unit A ?
 (a) N_{C_n} (b) $N - 1_{C_{n-1}}$
 (c) $N_{C_{n-1}}$ (d) None of these
Ans. (b) $N - 1_{C_{n-1}}$

74. Which of the following is not a property of an estimator?

- (a) Unbiasedness (b) Efficiency
(c) Consistency (d) Accuracy

Ans. (d) Accuracy

75. Which of the following statements is true?

- (a) Sample variance is an unbiased estimate of population variance
(b) Sample mean square is an unbiased estimate of population variance
(c) Sample mean is an unbiased estimate of population mean
(d) None of these

Ans. (c) Sample mean is an unbiased estimate of population mean

76. The description of all the sampling units is called:

- (a) Population (b) Census
(c) Sampling frame (d) Sample survey

Ans. (c) Sampling frame

77. The unbiased estimate of population total under simple random sampling is:

- (a) $N\bar{Y}$ (b) $N\bar{y}$
(c) $n\bar{Y}$ (d) None of these

Ans. (b) $N\bar{y}$

78. The population size is 358 and a random number chosen is 716. Which unit of the population should be included in the sample?

- (a) This random number should be rejected
(b) No unit of the population should be included
(c) 358th unit should be included
(d) 716 can not be a random number

Ans. (c) 358th unit should be included

79. How many samples of 4 units can be drawn without replacement from a population of 6 units?

- (a) 4C_6 (b) 6C_4
(c) 4^6 (d) 6^4

Ans. (b) 6C_4

80. Which of the following cannot be an estimator?

- (a) Sample mean square
(b) Sample proportion
(c) Population proportion
(d) None of these

Ans. (c) Population proportion

THEORETICAL DISTRIBUTIONS

81. Which distribution is suitable to find the probability of getting defective screws in a packet of 100?

- (a) Binomial distribution
(b) Normal distribution
(c) Poisson distribution
(d) Continuous distribution

Ans. (c) Poisson distribution

82. Which of the following distributions is always positively skewed?

- (a) Binomial distribution
(b) Poisson distribution
(c) Normal distribution
(d) None of these

Ans. (b) Poisson distribution

83. If $n \rightarrow \infty$ and $p \rightarrow 0$ then Binomial distribution becomes:

- (a) Normal distribution
(b) Poisson distribution
(c) Binomial distribution
(d) Continuous distribution

Ans. (b) Poisson distribution

84. Which of the following probabilities under a normal distribution is 95%?

- (a) $P(-1.96 \leq X \leq 1.96)$
(b) $P(-1.96 \leq Z \leq 1.96)$
(c) $P(-1.96\sigma \leq X \leq 1.96\sigma)$
(d) $P(-1.96\sigma \leq Z \leq 1.96\sigma)$

Ans. (b) $P(-1.96 \leq Z \leq 1.96)$

85. If $X \sim N(200, 30)$ then $P(X \geq 200)$ is:

- (a) 1 (b) 0
(c) $\frac{1}{2}$ (d) Less than $\frac{1}{2}$

Ans. (c) $\frac{1}{2}$

86. Mean and variance of a Binomial distribution are

$\frac{20}{9}$ and $\frac{40}{27}$ respectively:

- (a) True (b) False
(c) Cannot be concluded (d) None of these

Ans. (b) False

87. The mean and standard deviation of a binomial distribution are 12 and 2 respectively, the distribution is:

- (a) Symmetrical (b) Positively skewed
(c) Negatively skewed (d) Can't be said

Ans. (c) Negatively skewed

88. The parameters of normal distribution provide:

- (a) Mean and variance
(b) Standard deviation and coefficient of skewness
(c) Probability density and Probability distribution functions
(d) None of these

Ans. (a) Mean and variance

89. If $p = 0.5$, the Binomial distribution becomes:

- (a) Platykurtic (b) Leptokurtic
(c) Mesokurtic (d) None of these

Ans. (a) Platykurtic

90. What is the number of modes in a binomial distribution having 15 trials with mean 5?

- (a) 1 (b) 2
(c) Can't be said (d) No mode

Ans. (a) 1

91. Which of the following relations is true for Poisson distribution ?

- (a) Mean > Median > Mode
(b) Mean = Standard deviation
(c) $\beta_1 < 0$ (d) $\gamma_1 < 0$

Ans. (a) Mean > Median > Mode

92. If x is a normal variate and t is a real number then what does the distribution function $F_x(t)$ mean ?

- (a) $F_x(t)$ = Total area under the normal curve.
(b) $F_x(t) = P(x = t)$
(c) $F_x(t) = P(x \leq t)$ (d) None of these

Ans.

93. If $X \sim N(\mu, \sigma)$ then what is the median of x ?

- (a) μ (b) $\mu \pm \sigma$
(c) σ (d) σ^2

Ans.

94. For which value of λ , a Poisson distribution is leptokurtic ?

- (a) $\lambda > 0$ (b) $\lambda < 0$
(c) λ is an integer (d) Any real value of λ .

Ans.

95. If $p = \frac{1}{3}$ then the binomial distribution is _____.

- (a) Leptokurtic (b) Platykurtic
(c) Mesokurtic (d) Cannot be determined

Ans. (a) Leptokurtic

96. What is the quartile deviation of a standard normal distribution ?

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

Ans.

97. There are 10 multiple choice questions each having 4 suggested answers out of which only one is true. If a student marks the answers at random, what is the probability that he gets exactly 3 correct answers ?

- (a) ${}^{10}C_3$ (b) $\left(\frac{1}{4}\right)^3$
(c) $3 \times \left(\frac{1}{4}\right)^3 \times \left(\frac{3}{4}\right)^7$ (d) None of these

Ans. (d) None of these

The correct answer is ${}^{10}C_3 \left(\frac{1}{4}\right)^3 \left(\frac{3}{4}\right)^7$

98. A Poisson distribution has two modes, 6 and 7. Which of the following is true ?

- (a) The distribution is symmetrical
(b) Mean of the distribution is 6
(c) Standard deviation = $\sqrt{7}$
(d) None of these

Ans. (c) Standard deviation = $\sqrt{7}$

99. For a binomial distribution, Mean = Median = Mode. Then $q =$ _____.

- (a) 0 (b) 0.5
(c) 1 (d) Cannot be determined

Ans. (b) 0.5

100. Which of the following distributions cannot be symmetrical ?

- (a) Binomial distribution (b) Poisson distribution
(c) Normal distribution (d) None of these

Ans. (b) Poisson distribution