(GCF-19, GCF-20, GCF-21, GCF-22, GCF-23, VCF-4, SCF-8, NOV-20 PD & GD, Foundation Nov. 19 Rep.)

DATE: 10.08.2020   MAXIMUM MARKS: 100   TIMING: 3¼ Hours

BUSINESS MATHEMATICS, REASONING & STATISTICS

Question No. 1 is Compulsory. Answer any four question from the remaining five questions. Wherever necessary, suitable assumptions should be made and disclosed by way of note forming part of the answer.
Working Notes should from part of the answer.

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1.   Out of Rs. 20,000 Narendra gives some amount on loan at simple interest rate 8% per annum and rest amount at simple interest rate $\frac{4}{3}$ % per annum. At the end of year he earns Rs. 800. The amount given at 8% rate will be:-
(a)   Rs. 8,000
(b)   Rs. 6,000
(c)   Rs. 10,000
(d)   Rs. 12,000

2.   The compound interest on 10 lakh at 8% per annum is Rs. 2,59,712 when interest is compounded yearly then the time period is:-
(a)   2 years
(b)   3 years
(c)   4 years
(d)   5 years

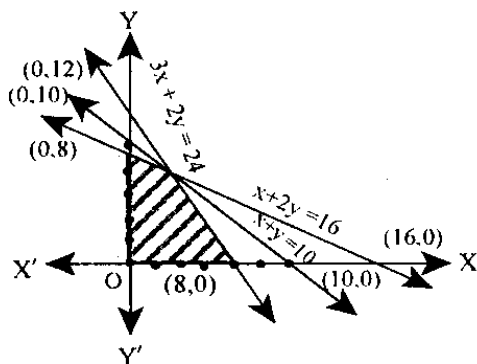3. $\begin{pmatrix} x & y \\ 2 & 3 \end{pmatrix} \times \begin{pmatrix} 1 & 2 & 3 \\ x & y & z \end{pmatrix}$

(a) $\begin{bmatrix} x+2xy & 3x+y^2 & 3xyz \\ 2+3x & 4+3y & 6+3z \end{bmatrix}$

(b) $\begin{bmatrix} x+xy & 2x+y^2 & 3x+yz \\ 2+3x & 4+3y & 6+3z \end{bmatrix}$

(c) $\begin{bmatrix} x+2xy & 2xy+y^2 & 12yz \\ 2+3x & 4+3y & 6+3z \end{bmatrix}$

(d) $\begin{bmatrix} x-xy & 2x-y^2 & 3x-yz \\ 2+3x & 4+3y & 6+3z \end{bmatrix}$

4.   The shaded region represents:

(a) $3x + 2y \leq 24, x + 2y \geq 16, x + y \leq 10x, x \geq 0, y \geq 0,$

(b) $3x + 2y \leq 24, x + 2y \leq 16, x + y \geq 10, x \geq 0, y \geq 0$

(c) $3x + 2y \leq 24, x + 2y \leq 16, x + y \leq 10, x \geq 0, y \geq 0$

(d)   None

5.   There are 7 Men and 3 Ladies. Find the number of ways in which a committee of 6 can be formed of them if the committee is to include at least two ladies ?
(a)   160
(b)   180
(c)   150
(d)   None

6.   If $A = \{a, b, c\}$ and $R = \{(a, a), (a, b), (b, c), (b, b), (c, c), (c, a)\}$ is a relation on A, then which one of the following is correct?
(a)   R is reflexive, symmetric and transitive
(b)   R is reflexive and symmetric, but not transitive
(c)   R is reflexive and transitive, but not symmetric
(d)   R is reflexive, but neither symmetric nor transitive

7.   Assuming that the discount rate is 7% per annum, how much would you pay to receive Rs. 60 growing at 5%, annually, forever?
(a)   3000
(b)   2500
(c)   4000
(d)   5000

8.   The simple interest on Rs.1650 at the rate of 4% p.a. is less by Rs. 30 than the interest on Rs. 1800 calculated at the same rate the time period of money lent is:-
(a)   3 years
(b)   4 years
(c)   5 years
(d)   6 years

9.   If $^{n+2}C_r = {}^{n+2}C_{10-r}$ then $^{n}C_6$ equals to
(a)   8
(b)   28
(c)   56
(d)   None of these

10.   If $\log^{2}_{10} = 0.3010$ the value of $\log_5^{1024}$ is:-
(a)   4.306
(b)   3.010
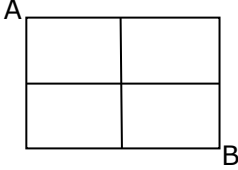(c)   6.931
(d)   1.386

11.   The population of a village increase by 2% per year, if current population is 50,000 then find the population of village after 2 years:-
(a)   52,020
(b)   52,000
(c)   51,980
(d)   52,100

12.   The mean proportion between $\dfrac{a-b}{a+b}$ and $\dfrac{a^2 b^2}{a^2 - b^2}$ is:-

(a) $\dfrac{ab}{a-b}$

(b) $\dfrac{ab}{a+b}$

(c) $\dfrac{a-b}{ab}$

(d) $\dfrac{a+b}{ab}$

13. $A = \begin{bmatrix} 1 & -2 \\ 3 & 2 \end{bmatrix}$

A^{-1} is equal to:-

(a) $\begin{bmatrix} \frac{2}{8} & \frac{2}{8} \\ -3 & \frac{1}{8} \end{bmatrix}$

(b) $\begin{bmatrix} \frac{2}{8} & 2 \\ \frac{-3}{8} & \frac{1}{8} \end{bmatrix}$

(c) $\begin{bmatrix} \frac{1}{4} & \frac{1}{4} \\ \frac{-3}{8} & \frac{1}{8} \end{bmatrix}$

(d)   None

14.   A sum of money doubles itself in 5 years at compound interest it will be eight times:-
(a)   10 years
(b)   12 years
(c)   15 years
(d)   20 years

15.   A man spends 75% of his income his income increase by 20% and his expenditure also increase by 10% then the percentage increase in his savings is:-
(a)   10%
(b)   20%
(c)   25%
(d)   50%

16. $\displaystyle\int \frac{8^{1+x} + 4^{1-x}}{2^x} dx$

   (a) $\dfrac{2^{2x+3}}{\log 3} - \dfrac{2^{2-3x}}{\log 2} + c$

   (b) $\dfrac{2^{3x+2}}{\log 2} - \dfrac{2^{3x-2}}{3\log 2} + c$

   (c) $\dfrac{2^{2x+3}}{2\log 2} - \dfrac{2^{2-3x}}{3\log 2} + c$

   (d) None of these

17. There is 80% increase in an amount in 8 years at simple interest. What will be the compound interest of Rs. 14000 after 3 years at the same interest rate per annum compounded annually?
   (a) Rs. 4612
   (b) Rs. 4634
   (c) Rs. 3714
   (d) Rs. 3784

18. If the sum of three consecutives multiples of 13 is 390 then second multiple of 13 is:-
   (a) 117
   (b) 130
   (c) 143
   (d) 156

19. If 5th and 12th terms of an AP are 14 and 35 respectively, find the first term of AP.
   (a) 4
   (b) 2
   (c) 1
   (d) 3

20. If you want to accumulate Rs. 50,000 by making equal payments at the end of each quarter for the next five years, what will be the size of these investments, if money is worth 6% per annum converted quarterly?
   (a) 3024.13
   (b) 2103.13
   (c) 2190.02
   (d) 2162.29

21. The number of straight lines can be formed out of 10 point of which 7 are collinear
   (a) 24
   (b) 21
   (c) 25
   (d) 26

22. If $F:R \rightarrow R$ is a bijection function given by $f(x) = (x-1)^3 + 2$ then $f^{-1}(x)$ is

   (a) $(x-2)^{1/3} + 1$

   (b) $(x-2)^{-1/3} + 1$

   (c) $(x+2)^{1/3} - 1$

   (d) None of these

23. If $2x^2 + 5xy + 3y^2 = 1$ then $\frac{dy}{dx}$ is

   (a) $\dfrac{\text{-4x-5y}}{\text{5x+6y}}$

   (b) $\dfrac{\text{4x+5y}}{\text{5x−6y}}$

   (c) $\dfrac{\text{4x−5y}}{\text{5x+6y}}$

   (d) None

24. A fertilizer company produces two types of fertilizers called grade I and grade II. Each of these types is processed through two critical chemical plant units. Plant A has maximum of 120 hours available in a week and plant B has maximum of 180 hours available in a week. Manufacturing one bag of grade I fertilizer requires 6 hours in plant A and 4 hours in plant B. Manufacturing one bag of grade II fertilizer requires 3 hours in plant A and 10 hours in plant B Express this using linear inequalities.

   (a) $6x + 10y \le 120, 3x + 4y \le 180, x, y \ge 0$
   (b) $6x + 10y \ge 120, 3x + 4y \ge 180, x, y \ge 0$
   (c) $6x + 3y \le 120, 4x + 10y \le 180, x, y \ge 0$
   (d) $6x + 3y \ge 120, 4x + 10y \ge 180, x, y \ge 0$

25. If $\propto, \beta$ are roots of $x^2 + x + 2 = 0$, then the value of $\dfrac{\propto}{\beta} + \dfrac{\beta}{\propto}$

   (a) $\dfrac{-2}{3}$

   (b) $\dfrac{-3}{4}$

   (c) $\dfrac{-3}{2}$

   (d) None of these

26. What is the number of ways that 4 boys and 3 girls can be seated so that boys and girls alternate?
   (a) 12
   (b) 72
   (c) 120
   (d) 144

27. How many words, with or without meaning can be formed by using all the letters of the word "MACHINE", so that the vowels occurs only the odd positions ?
    (a) 1440
    (b) 720
    (c) 576
    (d) 640

28. $\log\left(a + \sqrt{a^2 + 1}\right) + \log\left(\frac{1}{a+\sqrt{a^2+1}}\right)$ is equal to
    (a) 1
    (b) 0
    (c) 2
    (d) $\frac{1}{2}$

29. The Sum of all natural numbers between 120 to 480, which are exactly divisible by 4 and 6 ?
    (a) 8820
    (b) 9300
    (c) 8700
    (d) 8600

30. Insurance company is trying to sell you an investment policy that will pay you Rs. 30,000 per year forever. If the required return on this investment is 5.8% p.a. How much will you pay for this policy?
    (a) 5,32,241.48
    (b) 5,17,241.38
    (c) 4,82,348.38
    (d) 6,48,441.37

31. The value of furniture depreciates by 10% a year, if the present value of the furniture in an office is Rs. 21,870, calculate the value of furniture 3 years ago:-
    (a) Rs. 30,000
    (b) Rs. 35,000
    (c) Rs. 40,000
    (d) Rs. 50,000

32. Find the effective rate of interest of 9.9% p.a. calculated monthly:-
    (a) 9.9%
    (b) 11.36%
    (c) 9.36%
    (d) 10.36%

33. On what sum difference between compound interest and simple interest for two year at 10% per annum is Rs. 372.
    (a) Rs. 37,200
    (b) Rs. 37,000
    (c) Rs. 37,500
    (d) None

34. What is the net present value of piece of property which would be valued at Rs. 2 Lakh at the end of 2 years? (annual rate of increase = 5%)
    (a) Rs. 1.81 Lakh
    (b) Rs. 2.01 Lakh
    (c) Rs. 2.00 Lakh
    (d) Rs. 1.91 Lakh

35. If $2^a = 3^b = 12^c$

    then ab is equal to :-
    (a) a+b+c
    (b) c (a+2b)
    (c) c (2a+b)
    (d) None

36. If $a = 1 + \dfrac{1}{2} + \dfrac{1}{2^2} + \dfrac{1}{2^3} + ------\infty$

    $b = 1 + \dfrac{1}{6} + \dfrac{1}{6^2} + \dfrac{1}{6^3} + ------\infty$

    Then the value of ab is:-
    (a) $\dfrac{5}{12}$
    (b) $\dfrac{5}{6}$
    (c) $\dfrac{12}{5}$
    (d) 2

37. (AUB')' is equal to:-
    (a) A-B
    (b) B-A
    (c) A' U B'
    (d) A' U B

38. If $x = \log t$ and $y = \dfrac{1}{t}$, then $\dfrac{d^2y}{dx^2} + \dfrac{dy}{dx}$ is equal to :

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

39. A sum of money lent out at simple interest amounts to Rs. 720 after 2 years and Rs. 1020 after a further period of 5 years. Find the principal.
    (a) Rs. 520
    (b) Rs. 6000
    (c) Rs. 600
    (d) Rs. 1740

40.   If A is a skew symmetric matrix of order 3, then the value of |A| is:
   (a)   3
   (b)   9
   (c)   0
   (d)   27

41.   The missing number in the series:- 7, 11, 13, 17, 19, 23, 25, 29, ?
   (a)   30
   (b)   31
   (c)   32
   (d)   33

42.   In a certain code language "Great solution turn plan" is written "&T5   #N8   @N4 %N4". Then "Tamilnadu" written in that code:-
   (a)   #u9
   (b)   &T9
   (c)   @U9
   (d)   @T9

43.   Rahim started from point X and walked straight 5 km west, then turned left and walked straight 2 km and again, turned left and walked straight 7 km. In which directions is he from the point X ?
   (a)   North - East
   (b)   South - West
   (c)   South - East
   (d)   North – West

44.   In the given going from A to B only on the lines and taking the least length of path, in how many ways can reach?
   (a)   2
   (b)   4
   (c)   6
   (d)   8

45.   From the given word, Select the word which cannot be formed using the letter of the given word:-
   TOKENISM

   (a)   STONE
   (b)   NOISE
   (c)   EMITS
   (d)   NAMES

46.   Find odd man out of the following series:-
   7, 9, 13, 17, 19
   (a)   7
   (b)   9
   (c)   19
   (d)   13

47. Pointing to an old man, vijay said,"His son is my son's uncle". How is old man related to Vijay?
    (a) Brother
    (b) Uncle
    (c) Father
    (d) Grand father

48. Given that:
    A is the mother of B.
    C is the son of A.
    D is the brother of E.
    E is the daughter of B.
    Who is grandmother of D ?
    (a) E
    (b) B
    (c) C
    (d) A

49. Seven person X, Y, Z, P, Q, R and S are sitting around a circular table facing the centre but not necessarily in the same order Q is fourth to the left of Y. P is third to the right of X, Y is to the immediate right of X, Z is fourth to the right of R, R is not an immediate neighbour of P. who is second to the left of S
    (a) Q
    (b) R
    (c) X
    (d) Y

50. I started walking down a road in the morning facing the Sun. After walking for sometime I turned to my left. Then I turned to my right. In which direction was I going then ?
    (a) East
    (b) West
    (c) North
    (d) South

51. Next term in the series 1, 8, 4, 27, 9,……….is
    (a) 49
    (b) 36
    (c) 64
    (d) 125

52. Identify the single letter, which when removed from the following words form new words.
    MINK, WARM, LAMP, TEAM
    (a) A
    (b) R
    (c) M
    (d) L

53. Five Friends P, Q, R, S and T are sitting in a row facing North. Here S is between T
     and Q and Q is to the immediate left of R. P is to the immediate left of T. What is in
     the middle?
     (a)   S
     (b)   T
     (c)   Q
     (d)   R

54. A question and two statements numbered I and II are given below it. You have to
     decide whether the data provided in the statements are sufficient to answer the
     question.
     How many sons does X have?
     Statements:-
     I.   E and W are only two brothers of P.
     II.   P is the only daughter of Q and X.
     (a)   Only statement I is sufficient.
     (b)   Only statement II is sufficient.
     (c)   Both statement I and II are sufficient
     (d)   Both statement I and II are not sufficient

55. Find the odd one out.
     (a)   C72X
     (b)   E110V
     (c)   G140T
     (d)   J180P

56. H is richer than J. M is richer than P. L is as rich as J, A is richer than H. What
     conclusion can be definitely drawn from the above statement?
     (a)   J is more poorer than P
     (b)   M is richer than A
     (c)   P is richer than L
     (d)   L is poorer than H

57. **(Directions Q 57 to 60)** Two statements are followed by two conclusions I and II,
     you have to take the two given statements to be true , disregarding the commonly
     known facts and then decide which of the given conclusions logically follows from the
     two given statements?
     Statements:
     (i)   All pens are pencils
     (ii)   All Books are pencils
     Conclusions:-
     I.   All pens are books.
     II.   Some books are pens.
     (a)   Only Conclusion I follows
     (b)   Only Conclusion II follows
     (c)   Both Conclusion I and II follows
     (d)   Neither Conclusion I nor II follows

58.   Statements:
        (i)   Some phones are watches.
        (ii)   All watches are guns.

        Conclusions:
        (I)   All guns are watches.
        (II)   Some guns are phones.
        (a)   Only conclusion I follows.
        (b)   Only conclusion II follows.
        (c)   Either I or II follows.
        (d)   Neither I nor II follows.

59.   Statements:
        (i)   Some books are pens.
        (ii)   No pen is pencil.

        Conclusions:
        (I)   Some books are pencil.
        (II)   No book is pencil.
        (a)   Only conclusion I follows.
        (b)   Only conclusion II follows.
        (c)   Either I or II follows.
        (d)   Neither I nor II follows.

60.   Statements:
        (i)   Some players are singers.
        (ii)   All singers are tall.

        Conclusions:
        (I)   Some players are tall.
        (II)   All players are tall.
        (a)   Only conclusion I follows.
        (b)   Only conclusion II follows.
        (c)   Either I or II follows.
        (d)   Neither I nor II follows.

61.   In tabulation 'Caption' is
        (a)   the upper part of the table
        (b)   the lower part of the table
        (c)   the main part of the table
        (d)   the upper part of the table that describes the column and sub-column

62.   Bar diagrams are _____ dimensional diagrams.
        (a)   multi
        (b)   two
        (c)   one
        (d)   three

63. If two groups with 2 and 3 observations have harmonic means $\frac{2}{5}$ and $\frac{1}{5}$ respectively, then combined harmonic mean of 5 observations is

    (a) $\frac{1}{2}$

    (b) $\frac{1}{4}$

    (c) $\frac{1}{3}$

    (d) None of these

64. If two variables x and y are related by 2x+3y-7=0 and the mean and mean deviation of x about mean are 3 and 0.3 respectively, then the co-efficient of mean deviation of y about mean is:
    (a) -5
    (b) 4
    (c) 12
    (d) 60

65. If a variable x takes 20 values $X_1, x_2,\ldots\ldots\ldots,X_{10}, -X_1, -X_2,\ldots\ldots\ldots.-X_{10}$ such $\sum_{i=1}^{20} x_i^2 = 40,$ that then standard deviation of x is
    (a) 1
    (b) $\sqrt{2}$
    (c) 4
    (d) None of these

66. What is the G.M. for the numbers 2,4,8,16,32,64?
    (a) $2^{5/2}$
    (b) $2^{7/2}$
    (c) 33
    (d) None

67. A card is drawn at random from a pack. If it is known that the card drawn is red, what is the probability that it is a diamond?
    (a) 0.2
    (b) 0.3
    (c) 0.4
    (d) 0.5

68. The following table gives distribution of wages of 100 workers:

Wages (Rs.)	120-140	140-160	160-180	180-200	200-220	220-240	240-260
No. of Workers	9	20	0	10	8	35	18

The probability that his wages are under Rs. 140 is :
    (a) 20/100
    (b) 9/100
    (c) 29/100
    (d) None

69. A bag contains 6 white and 4 red balls. If a person draws 2 balls and receive Rs. 20 and Rs. 40 for a white and red ball respectively, then his expected amount is
     (a)   Rs. 30
     (b)   Rs. 86
     (c)   Rs. 52
     (d)   Rs. 56

70. Net monthly income of a CA was Rs. 25,000 in 2005. The CPI was 160 in 2005. It rises to 220 in 2010. If he has to be rightly compensated. The additional dearness allowance to be paid to the CA is:
     (a)   9375
     (b)   34375
     (c)   18181.81
     (d)   6818.18

71. In normal distribution first quartile and mean deviation are 13.25 & 8 respectively what will be the value of mode
     (a)   20
     (b)   10
     (c)   15
     (d)   12

72. From the following data

Commodity	A	B	C	D	E	F
Group Index	120	132	98	115	108	98
Weight	6	3	4	2	1	4

The general Index I is given by:
     (a)   111.90
     (b)   113.45
     (c)   117.25
     (d)   114.75

73. If the relation between two variables x and y is 5x+2y=6 and the mean deviation (M.D.) of x about its mean is 6 then the M.D. of y about its mean is
     (a)   6
     (b)   15
     (c)   18
     (d)   none of these

74. If two variables are uncorrelated, their regression lines are:
     (a)   Parallel
     (b)   Perpendicular
     (c)   (a) and (b) both
     (d)   Inclined at 45 degrees.

75. 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

76.   The two lines of regression are x+2y–15 = 0 and 2x+3y–18 = 0. The regression equation of Y on X is :
      (a)   x+2y–15=0
      (b)   2x+3y–18 = 0
      (c)   Both (a) and (b)
      (d)   None

77.   If Standard deviation of a, b, c is 5 then variance of 3a, 3b, 3c is
      (a)   15
      (b)   225
      (c)   45
      (d)   18

78.   Consider the following data:

Year :	2000	2001	2002	2003	2004
Price :	15	44	36	60	70

      The index number for 2003 based on 2000 is:
      (a)   300
      (b)   250
      (c)   400
      (d)   none of these

79.   When the product of price index and the quantity index is equal to the corresponding value index then it is known as :
      (a)   Unit test
      (b)   Time reversal test
      (c)   Factor reversal test
      (d)   None

80.   Let L be the lower class boundary of a class in a frequency distribution and may be the mid-point of the class. Which one of the following is the higher class boundary of the class ?
      (a) $m + \dfrac{m+L}{2}$

      (b) $L + \dfrac{m+L}{2}$

      (c)   2m–L
      (d)   m–2L

81.   The Cov (xivi) between x and y for the following data:
      $\sum x_i = 15,\ \sum y_i = 36,\ \sum x_i y_i = 110, n = 5$ is :
      (a)   0.3
      (b)   0.4
      (c)   0.5
      (d)   0.7

82. If it rains, a dealer of umbrella can earn Rs.300 per day, if it does not rain he can lose Rs. 80 per day. What is his expectation if the probability of a rainy day is 0.57 (in rupees) ?
    (a) 136.6
    (b) 138.6
    (c) 146.6
    (d) 146

83. $\phi(a)$ represents
    (a) $-\infty$ to a or a to ∞ area
    (b) Cumulative distributive function
    (c) Probability density function
    (d) (a) and (b)

84. The interval $(\mu-3\sigma, \mu+3\sigma)$ covers_____area of a normal distribution.
    (a) 90%
    (b) 95%
    (c) 99%
    (d) 99.73%

85. From the following data

Year	1992	1993	1994	1995	1996
Link Index	100	103	105	112	108

(Base 1992 = 100) for the year 1993-1996. The construction of chain index is:
    (a) 103, 100.94, 107, 118.72
    (b) 103, 108.15, 121.13, 130.82
    (c) 107, 100.25, 104, 118.72
    (d) None of these

86. Let h be the harmonic mean of n positive observations. If each of the observations are repeated once more, then harmonic mean of those 2n observations is
    (a) h
    (b) 2h
    (c) $\frac{1}{2}$ h
    (d) none of these

87. Hidden trend, if any, in the data can be noticed in
    (a) Textual presentation
    (b) Tabulation
    (c) Diagrammatic representation
    (d) All of these

88.   Mean and S.D. of a given set of observations is 1,500 and 400 respectively. If there is hiked by 20% in the first year and each observation is an increment of 100 in 2nd year, then find new mean and S.D.
      (a)   1920, 480
      (b)   1900, 480
      (c)   1600, 480
      (d)   1600, 400

89.   If a variable takes the discrete values $a + 4, a - \frac{7}{2}, a - \frac{5}{2}, a - 3, a - 2, a + \frac{1}{2}, a - \frac{1}{2}, a + 5 \ (a > 0)$, then the median is:

      (a) $a - \dfrac{5}{4}$

      (b) $a - \dfrac{1}{2}$

      (c) $a - 2$

      (d) $a + \dfrac{5}{4}$

90.   If p : q are the odds in favour of an event, then the probability of that event is :

      (a) $\dfrac{p}{q}$

      (b) $\dfrac{p}{p+q}$

      (c) $\dfrac{q}{p+q}$

      (d)   None of these

91.   If two regression lines are 3x+4y−18=0 and 5x+2y=10. Then $\sigma_x : \sigma_y$= ?
      (a)   0.53
      (b)   0.73
      (c)   0.60
      (d)   None

92.   Given the following data :

Commodity	P_0	q_0	p_1	q_1
A	1	10	2	5
B	1	5	X	2

where p and q represent price and quantity respectively and subscript for the time period. The value of X if the ratio between Laspeyres (L) and Paasche's (P) index numbers is 28 : 27 i.e., L : P = 28 : 27 is :
      (a)   3
      (b)   4
      (c)   5
      (d)   6

93. For Finding correlation between two attributes, we consider
    (a)   Pearson's correlation coefficient
    (b)   Scatter diagram
    (c)   Spearman's rank correlation coefficient
    (d)   Coefficient of document deviations.

94. Chain index is equal to:

    (a) $\text{link relative of current year} \times \dfrac{\text{Chain index of the current year}}{100}$

    (b) $\text{link relative of current year} \times \dfrac{\text{Chain index of the previous year}}{100}$

    (c) $\text{link relative of previous year} \times \dfrac{\text{Chain index of the current year}}{100}$

    (d)   None of these

95. Given the prices of 2 commodities are increased by 10% and 20% respectively and the price of another commodity is decreased by 30%. The relative importance of 3 commodities are in the ratio 3:3:1. Find weighted price index number.
    (a)   80
    (b)   109
    (c)   108.5
    (d)   110

96. If the correlation coefficient $r = \pm 1$ for the random variables X and Y, then the lines of regressions of Y on X and Y on Y
    (a)   are perpendicular to each other
    (b)   coincide
    (c)   intersect with acute angle $\pi/4$.
    (d)   are parallel to each other.

97. If byx = 1.24, bxy = 0.36, $\bar{x} = 5.5,\ \bar{y} = 8.8,$ then regression equation of y on x is given by
    (a)   y = 1.24 x + 1.98
    (b)   y = −1.24 x + 1.98
    (c)   x = 0.3 y + 2.86
    (d)   None of these

98. The two lines of regression are 2x − 7y + 6 = 0 and 7x − 2y + 1 = 0. What is the correlation coefficient between x and y?
    (a)   -2/7
    (b)   2/7
    (c)   4/49
    (d)   None of these

99.   Sum of deviation from mean for any set of observation is -
       (a)   Negative
       (b)   Positive
       (c)   Zero
       (d)   None of these

100.   For two positive numbers SD is always -
       (a)   Half of range
       (b)   Double of range
       (c)   Zero
       (d)   None of these

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