Test Series: October 2021

MOCK TEST PAPER 1

FOUNDATION COURSE

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours **Marks: 100**

Part A: Business Mathematics and Logical Reasoning

1. If x: y = 3:5, then find $\left(\frac{1}{x}+\frac{1}{y}\right):\left(\frac{1}{x}-\frac{1}{y}\right)$

   (a) 2

   (b) 4

   (c) 6

   (d) 8

2. if A: B = 3:4 and B:C= 7:9, C:D = 2:3 and D is 50% more than E, find the ratio between A and E

   (a) 2:3

   (b) 3:4

   (c) 3:5

   (d) 4:5

3. Find the value of $\sqrt{6561}+\sqrt[4]{6561}+\sqrt[8]{6561}$

   (a) 81

   (b) 93

   (c) 121

   (d) 243

4. Find the value of $\log\frac{x^n}{y^n}+\log\frac{y^n}{z^n}+\log\frac{z^n}{x^n}$

   (a) -1

   (b) 0

   (c) 1

   (d) 2

5. If $\frac{8^n\times 2^3\times 16^{-1}}{2^n\times 4^2}=\frac{1}{4}$ then the value of n

   (a) 1

   (b) 3

   (c) $\frac{3}{2}$

(d) $\frac{2}{3}$

6. Given the Quadratic Equation $\frac{x+1}{x}-\frac{x}{x+1}=\frac{3}{2}$

   (a) 1 and -2/3

   (b) -1 and 2/3

   (c) -1 and -2/3

   (d) 1 and 2/3

7. A dealer has only ₹ 5760 to invest in fans (x) and sewing machines (y). The cost per unit of fan and sewing machine is ₹360 and ₹ 240 respectively. This can be shown by:

   (a) $360x + 240y \geq 5760$

   (b) $360x + 240y \leq 5760$

   (c) $360x + 240y = 5760$

   (d) none of these

8. The point of intersection between the lines $3x+ 4y = 7$ and $4x –y = 3$ lie in the

   (a) 1st quadrant.

   (b) 2nd quadrant.

   (c) 3rd quadrant

   (d) 4th quadrant.

9. The roots of equation $9^{x+2} – 6.3^{x+1} + 1 = 0$ are

   (a) -2

   (b) 2

   (c) $\sqrt{2}$

   (d) 0

10. The roots of the equation $x^2-x+1=0$ are

    (a) Imaginary and unequal

    (b) Real and unequal

    (c) Real and equal

    (d) Imaginary and equal

11. If one root of the quadratic equation is $2+\sqrt{3}$, the equation is _____

    (a) $x^2-4x+1=0$

    (b) $x^2+4x+1=0$

    (c) $x^2-4x-1=0$

    (d) none of these

12. If $\sqrt{1+\frac{25}{144}} = 1+\frac{x}{12}$, then x is

    (a) 1

    (b) 2

    (c) 3

    (d) 0

13. A sum of ₹46,875 was lent out at simple interest and at the end of 1 year 8 months, the total amount was ₹ 50,000. Find the rate of interest per annum.

    (a) 8%

    (b) 10%

    (c) 12%

    (d) None

14. A sum of money amount to ₹ 6,200 in 2 years and ₹ 7,400 in 3 years. The principal and rate of interest are

    (a) ₹ 3,800, 31.57%

    (b) ₹ 3,000, 20%

    (c) ₹ 3,500, 15%

    (d) none of these

15. The effective rate of interest corresponding to a nominal rate 3% p.a payable half yearly is

    (a) 3.2% p.a

    (b) 3.25% p.a

    (c) 3.0225% p.a

    (d) none of these

16. 1A sum of money gets doubled in 5 years at X% simple interest. If the interest was Y%, the sum of money would have become ten-fold in thirty years. What is Y – X (in %)

    (a) 10

    (b) 5

    (c) 8

    (d) None of the above

17. The nominal rate of growth is 17% and inflation is 9% for the five years. Let P be the Gross Domestic Product (GDP) amount at the present year then the projected real GDP after 6 years is

    (a) 1.587P

    (b) 1.921 P

    (c) 1.403 P

    (d) 2.51 P

18. The difference between Compound Interest and Simple Interest on a certain sum for 2 years at 6% p.a. is ₹ 13.50. Find the sum

    (a) 3750

(b) 2750

(c) 4750

(d) none

19. The sum required to earn a monthly interest of Rs 1200 at 18% per annum Simple Interest is

(a) ₹ 50,000

(b) ₹ 60,000

(c) ₹ 80,000

(d) none of these

20. The compound interest earned by a money lender on ₹ 7,000 for 3 years if the rate of interest for 3 years are 7%, 8% and 8.5% respectively is

(a) ₹ 1750

(b) ₹1800

(c) ₹ 1776

(d) none of these

21. Find the present value of an annuity of ₹ 1,000 payable at the end of each year for 10 years, if the money is worth 5% effective.

(a) ₹ 7,724

(b) ₹ 7000

(c) ₹ 8000

(d) none of these

22. The present value of annuity of ₹3,000 per annum for 15 years at 4.5% p.a C.I. annually is

(a) ₹ 23,809.41

(b) ₹ 32,214.60

(c) ₹ 32,908.41

(d) none of these

23. A person desires to create a fund to be invested at 10% CI per annum to provide for a prize of ₹ 300 every year. Using V = a/I find V and V will be

(a) ₹ 2,000

(b) ₹ 2,500

(c) ₹ 3,000

(d) none of these

24. The future value of annuity of ₹2000 for 5 years at 5 % compounded annually is given (in nearest ₹) as

(a) ₹ 11, 051

(b) ₹ 21,021

(c) ₹ 1,56,24

(d) ₹ 61254

25. A Maruti Zen cost ₹ 3,60,000. Its price depreciates at the rate of 10% of a year during the first two years and at the rate of 20% in third year. What will be the price of car of the car after 3 years? Also find the total depreciation.

    (a) ₹ 1,26,720

    (b) ₹ 1,15,620

    (c) ₹ 1,25,000

    (d) ₹ 1,10,520

26. Find the value of n if (n+1)! = 42 (n–1)!

    (a) 6

    (b) -7

    (c) 7

    (d) -6

27. If ${}^{n}P_{13} : {}^{n+1}P_{12} = 3:4$ then value of n is

    (a) 15

    (b) 14

    (c) 13

    (d) 12

28. A question paper contains 6 questions, each having an alternative. The number of ways an examiner can answer one or more questions is

    (a) 720

    (b) 728

    (c) 729

    (d) none of these

29. ${}^{5}C_{1}+{}^{5}C_{2}+{}^{5}C_{3}+{}^{5}C_{4}+{}^{5}C_{5}$ is equal to _____

    (a) 30

    (b) 31

    (c) 32

    (d) 35

30. The second term of a G P is 24 and the fifth term is 81. The series is

    (a) 16, 36, 24, 54…..

    (b) 24, 36, 53… …

    (c) 16, 24, 36, 54,……

    (d) none of these

31. The sum of progression (a+b), a, (a–b).....n term is

    (a) $\frac{n}{2}$ [2a+(n–1)b]

(b) $\frac{n}{2}$ [2a+(3–n)b]

(c) $\frac{n}{2}$ [2a+(3–n)]

(d) $\frac{n}{2}$ [2a+ (n–1)]

32. The series $1+10^{-1}+10^{-2}+10^{-3}$.... to ∞ is

(a) 9/10

(b) 1/10

(c) 10/9

(d) none of these

33. Find the sum of first twenty-five terms of A.P. series whose n^{th} term is $\left(\frac{n}{5}+2\right)$.

(a) 105

(b) 115

(c) 125

(d) 135

34. Find *g o f* for the functions f (x) = $\sqrt{x}$, g (x) = $2x^2+1$

(a) $2x^2+1$

(b) 2x+1

(c) $2x^2+1)$ ($\sqrt{x}$)

(d) $\sqrt{x}$

35. If $f(x)=x^2-1$ and g(x) = $\frac{x+1}{2}$, then $\frac{f(3)}{f(3)+g(3)}$ is

(a) 5/4

(b) 4/5

(c) 3/5

(d) 5/3

36. If A = {4,5}, B = {2,3}, C = {5,6} then AX (B$\cap$C) is

(a) {(2,5), (3,5)}

(b) {(4,2), (4,6)}

(c) {(4,3), (4,2)}

(d) none of these

37. if $f(x) = x^2/e^x$, then f′(–1) is equal to

(a) -3e

(b) 1/e

(c) e

(d) none of these

38. If $y = e^{\sqrt{2x}}$, $\frac{dy}{dx}$ is calculated as

(a) $\frac{e^{\sqrt{2x}}}{\sqrt{2x}}$

(b) $e^{\sqrt{2x}}$

(c) $\frac{e^{\sqrt{2x}}}{\sqrt{2x}}$

(d) none of these

39. Evaluate: $\int_0^5 \frac{x^2}{x^2+(5-x)^2}dx$

(a) 1

(b) 0

(c) -1

(d) 2

40. Evaluate: $\int\left\{\frac{1}{\log x} - \frac{1}{(\log x)^2}\right\}dx$

(a) $\frac{1}{\log x}+c$

(b) $\frac{x}{\log x}+c$

(c) $-\frac{x}{\log x}+c$

(d) None of these

41. Find next term of the series 3,10,29,66, 127,?

(a) 164

(b) 187

(c) 216

(d) 218

42 Which number should come next 7, 26,63,124,215, 342,?

(a) 391

(b) 421

(c) 481

(d) 511

43 Find out the wrong number. 10,14,28,32,64,68,132

(a) 28

(b) 32

(c) 64

(d) 132

44. In a certain code 'SOUTHERN' is written as 'UVPTMQDG'. How is 'MARIGOLD' written in that code?

(a) JSBCNFKS

(b) JSBNHPME

(c) JSBNCKNF

(d) NBSKCJNF

45. In a certain code 'PRISM' is written as 'OSHTL' and 'RUBLE' is written as 'QVAMD'. How will 'WHORL' be written in that code?

(a) XISPM

(b) VINSK

(c) UINSK

(d) XGPQM

46 A is the son of C; C and Q are the sisters; Z is the mother of Q and P is the son of Z. Which of the following statements is true?

(a) A and P are cousins

(b) C and P are sisters

(c) P is the maternal uncle of A

(d) A is the maternal uncle of P

47. 'X @ Y' means 'X is the mother of Y;

'X $ Y' means 'X is the husband of Y;

'X # Y' means 'X is the sister of Y'.

'X * Y' means 'X is the son of Y'.

Which of the following indicates the relationship 'A is daughter of P'?

(a) P @ B # F * A

(b) P @ B # A * F

(c) A # F * B @ P

(d) A # F * B $ P

(From Q.48 to Q.49) Read the following information carefully and answer the questions given below?

There are six children playing football, namely P, Q, R, S, T and U. P and T are bothers, U is sister of T, R is the only son of P's uncle, Q and S are the daughters of the only brother of R's father

48. How many female players are there?

(a) one

(b) two

(c) three

(d) Four

49. How is S is related to P

(a) Uncle

(b) Sister

(c) Niece

(d) Cousin

50. Pointing towards photograph. Vinod said, “she is the daughter of my wife’s mother’s only daughter”. How is Vinod is related to the girl in the Photograph?

(a) Cousin

(b) Uncle

(c) Father

(d) None

51. Raju walks northwards. After a while, he turns to his right and a little further to his left. Finally, after walking a distance of one kilometre, he turns to his left again. In which direction is he moving now?

(a) North

(b) South

(c) East

(d) West

52. Ravi wants to go to the College. He starts from his home, which is in the East and comes to a crossing. The road to the left ends in a theatre, straight ahead is the hospital. In which direction is the College?

(a) North

(b) South

(c) East

(d) West

53. A man is facing south. He turns 135° in the anticlockwise direction and then 180° in the clockwise direction. Which direction is he facing now?

(a) North-East

(b) North-West

(c) South-East

(d) South-West

54. Rakesh moves towards South-east a distance of 7 km, then he moves towards West and travels a distance of 14 m. From here he moves towards North-west a distance of 7 m and finally he moves a distance of 4 m towards East and stood at that point. How far is the starting point from where he stood?

(a) 3 m

(b) 4 m

(c) 10 m

(d) 11 m

55. A and B start moving towards each other from two places 200 m apart. After walked 60 m, B turns left and goes 20 m, then he turns right and goes 40 m. He then turns right again and comes back to the road on which he had started walking. If A and B walk with the same speed, what is the distance between them now?

    (a) 20 m

    (b) 30 m

    (c) 40 m

    (d) 50 m

(56-58) Study the following information carefully to answer the questions given below. P, T, V, R, M, D, K and W are sitting around a circle table facing the centre. V is second to the left of T. T is fourth to the right of M. D and P are not immediate neighbours of T. D is third to the right of P. W is not an immediate neighbour P. P is to the immediate left of K.

56. Who is Second to the left of K?

    (a) P

    (b) R

    (c) M

    (d) W

57. Who is the immediate left of V?

    (a) D

    (b) M

    (c) W

    (d) None of these

58. What is R's Position with respect to V?

    (a) Third to the right

    (b) Fifth to the right

    (c) Third to the left

    (d) Second to the left

59. 8 Persons A, B, C, D, E, F, G and H are sitting in two rows opposite to each other. Each row has four persons. B and C are sitting in front of each other. C is between D and E. H is sitting immediate left of E. H and F are diagonally opposite. G and B are not near to each other. Who is in front of A?

    (a) E

    (b) D

    (c) C

    (d) B

60. A group of seven singers, facing the audience, are standing in a line on the stage as follow.

    (i) D is the right of C.

    (ii) F is stand beside G.

    (iii) Bis to the left of F.

    (iv) C and B are one person between them.

    (Vi) And D have one person between them.

Who is sitting on the second from extreme left?

(a) D

(b) F

(c) G

(d) E

Part B: Statistics

61. Statistics is concerned with

(a) Qualitative information

(b) Quantitative information

(c) (a) or (b)

(d) Both (a) and (b).

62. The primary data are collected by

(a) Interview method

(b) Observation method

(c) Questionnaire method

(d) All these.

63. The following data relate to the incomes of 86 persons:

Income in ₹	:	500–999	1000–1499	1500–1999	2000–2499
No. of persons	:	15	28	36	7

What is the percentage of persons earning more than Rs? 1500?

(a) 50

(b) 45

(c) 40

(d) 60

64. The following data relate to the marks of a group of students:

Marks:	Below 10	Below 20	Below 30	Below 40	Below 50
No. of students:	15	38	65	84	100

How many students got marks more than 30?

(a) 65

(b) 50

(c) 35

(d) 43

65. The curve obtained by joining the points, whose x- coordinates are the upper limits of the class-intervals and y coordinates are corresponding cumulative frequencies is called

(a) Ogive

(b) Histogram

(c) Frequency Polygon

(d) Frequency Curve

66. If x and y are related by x–y–10 = 0 and mode of x is known to be 23, then the mode of y is

(a) 20

(b) 13

(c) 3

(d) 23

67. If there are two groups with 75 and 65 as harmonic means and containing 15 and 13 observations then the combined HM is given by

(a) 65

(b) 70.36

(c) 70

(d) 71

68. If the quartile deviation of x is 6 and 3x + 6y = 20, what is the quartile deviation of y?

(a) 3

(b) 4

(c) 5

(d) 6

69. Which one is an absolute measure of dispersion?

(a) Range

(b) Mean Deviation

(c) Standard Deviation

(d) All these measures

70. The median of 27, 30, 26, 44, 42, 51, 37 is

(a) 30

(b) 42

(c) 44

(d) 37

71. Mean of 25,32,43,53,62,59,48,31,24,33 is

(a) 44

(b) 43

(c) 42

(d) 41

72. If the A.M of any distribution be 25 & one term is 18. Then the deviation of 18 from A.M is

(a) 7

(b) -7

(c) 43

(d) none

73. The algebraic sum of the deviations of a frequency distribution from its mean is always,
    (a) greater than zero
    (b) less than zero
    (c) zero
    (d) a non-zero number
74. Pooled Mean is also called
    (a) Mean
    (b) Geometric Mean
    (c) Grouped Mean
    (d) none
75. If x and y are related by y = 2x+ 5 and the SD and AM of x are known to be 5 and 10 respectively, then the coefficient of variation is
    (a) 25
    (b) 30
    (c) 40
    (d) 20
76. Following are the wages of 8 workers in rupees: 50, 62, 40, 70, 45, 56, 32, 45. If one of the workers is selected at random, what is the probability that his wage would be lower than the average wage?
    (a) 0.625
    (b) 0.500
    (c) 0.375
    (d) 0.450
77. Given that for two events A and B, P (A) = 3/5, P (B) = 2/3 and P (A) = 3/4, what is P (A/B)?
    (a) 0.655
    (b) 13/60
    (c) 31/60
    (d) 0.775
78. A problem in probability was given to three CA students A, B and C whose chances of solving it are 1/3, 1/5 and 1/2 respectively. What is the probability that the problem would be solved?
    (a) 4/15
    (b) 7/8
    (c) 8/15
    (d) 11/15
79. A packet of 10 electronic components is known to include 2 defectives. If a sample of 4 components is selected at random from the packet, what is the probability that the sample does not contain more than 1 defective?
    (a) 1/3
    (b) 2/3

(c) 13/15

(d) 3/15

80. The probability that there is at least one error in an account statement prepared by 3 persons A, B and C are 0.2, 0.3 and 0.1 respectively. If A, B and C prepare 60, 70 and 90 such statements, then the expected number of correct statements

(a) 170

(b) 176

(c) 178

(d) 180

81. A bag contains 6 white and 4 red balls. If a person draws 2 balls and receives ₹ 10 and ₹ 20 for a white and red balls respectively, then his expected amount is

(a) ₹ 25

(b) ₹ 26

(c) ₹ 29

(d) ₹ 28

82. What is the first quartile of X having the following probability density function?

$$f(x) = \frac{1}{\sqrt{72\pi}} e^{\frac{-(x-10)^2}{72}} \quad \text{for } -\infty < x < \infty$$

(a) 4

(b) 5

(c) 5.95

(d) 6.75

83. If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is

(a) 40

(b) 45

(c) 50

(d) 60

84. If X follows normal distribution with $\mu = 50$ and $\sigma = 10$, what is the value of

$P(x \leq 60 / x > 50)$?

(a) 0.8413

(b) 0.6828

(c) 0.1587

(d) 0.7256

85. For a normal distribution with mean as 500 and SD as 120, what is the value of k so that the interval [500, k] covers 40.32 per cent area of the normal curve? [Given $\varphi(1.30) = 0.9032$.]

(a) 740

(b) 750

(c) 656

(d) 800

86. If the mean deviation of a normal variable is 16, what is its quartile deviation?
    (a) 10.00.
    (b) 13.50.
    (c) 15.00.
    (d) 12.05.

87. For a Poisson variate X, P (X = 1) = P (X = 2). What is the mean of X?
    (a) 1.00.
    (b) 1.50.
    (c) 2.00.
    (d) 2.50.

88. For a Poisson distribution,
    (a) mean and standard deviation are equal.
    (b) mean and variance are equal.
    (c) standard deviation and variance are equal.
    (d) both (a) and (b).

89. The variance of a binomial distribution with parameters n and p is
    (a) $np^2 (1 – p)$.
    (b) $\sqrt{np(1-p)}$
    (c) $nq (1 – q)$
    (d) $n^2p^2 (1– p)^2$

90. For a p x q classification of bivariate data, the maximum number of conditional distributions is
    (a) p
    (b) p + q
    (c) pq
    (d) p or q

91. For a p x q bivariate frequency table, the maximum number of marginal distributions is
    (a) p
    (b) p + q
    (c) 1
    (d) 2

92. If the coefficient of correlation between two variables is 0.7 then the percentage of variation unaccounted for is
    (a) 70%
    (b) 30%
    (c) 51%
    (d) 49%

93. If the covariance between two variables is 20 and the variance of one of the variables is 16, what would be the variance of the other variable?

(a) $S^2y \geq 25$

(b) More than 10

(c) Less than 10

(d) More than 1.25

94. If the regression line of y on x and of x on y are given by $2x + 3y = -1$ and $5x + 6y = -1$ then the arithmetic means of x and y are given by

(a) (1, –1)

(b) (–1, 1)

(c) (–1, –1)

(d) (2, 3)

95. _____ satisfies circular test

(a) G.M. of price relatives or the weighted aggregate with fixed weights

(b) A.M. of price relatives or the weighted aggregate with fixed weights

(c) H.M. of price relatives or the weighted aggregate with fixed weights

(d) none

96. From the following data for the 5 groups combined

Group	Weight	Index Number
Food35	425	
Cloth	15	235
Power & Fuel	20	215
Rent & Rates	8	115
Miscellaneous	22	150

The general Index number is

(a) 270

(b) 269.2

(c) 268.5

(d) 272.5

97. Laspyres formula does not satisfy

(a) Factor Reversal Test

(b) Time Reversal Test

(c) Circular Test

(d) All the above

98. If $\Sigma P_0Q_0 = 1360$, $\Sigma P_nQ_0 = 1900$, $\Sigma P_nQ_n = 1880$ then the Laspeyre's Index number is

(a) 71

(b) 139

(c) 175

(d) None of these.

99. The consumer price Index for April 1985 was 125. The food price index was 120 and other items index was 135. The percentage of the total weight of the index is

(a) 66.67

(b) 68.28

(c) 90.25

(d) None of these.

100. Net monthly salary of an employee was ₹ 3000 in 1980. The consumer price index number in 1985 is 250 with 1980 as base year. If the has to be rightly compensated then, 7th dearness allowances to be paid to the employee is :

(a) ₹ 4.800.00

(b) ₹ 4,700.00

(c) ₹ 4,500.0

(d) None of these.

Test Series: November 2021

MOCK TEST PAPER TEST SERIES -II

FOUNDATION COURSE

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours **Marks: 100**

Part A: Business Mathematics and Logical Reasoning

1. If $\log_{10}5 + log_{10}(5x + 1) = log_{10}(x + 5) + 1$, then x is equal to:
   (a) 1
   (b) 3
   (c) 5
   (d) 10

2. If xy + yz + zx = -1, then the value of $\left(\frac{x+y}{1+xy}+\frac{z+y}{1+zy}+\frac{x+z}{1+zx}\right)$ is
   (a) xyz
   (b) $-\frac{1}{yz}$
   (c) $\frac{1}{xyz}$
   (d) $\frac{1}{x+y+z}$

3. The salaries of A, B and C are of ratio 2:3:5. if the increments of 15%, 10% and 20% are done their respective salaries, then find new salaries.
   (a) 23: 33: 60
   (b) 33:23:60
   (c) 23: 60:33
   (d) 33: 60: 23

4. If A: B = 5:3, B:C = 6:7 and C: D = 14:9 then the value of A: B:C:D
   (a) 20:14:12:9
   (b) 20:9:12:14
   (c) 20:9:14:12
   (d) 20:12:14:9

5. The salary of P is 25% lower than that of Q and the salary of R is 20% higher than Q , the ratio of salary of R and P will be :
   (a) 5:8
   (b) 8:5

(c) 5:3

(d) 3:5

6. The cab bill is partly fixed and partly varies on the distance covered. For 456 km the bill is Rs.8252, for 484 km the bill is Rs. 8728. What will the bill be for 500km?

   (a) Rs. 8876

   (b) Rs.9156

   (c) Rs.9472

   (d) Rs.9000

7. $(x + 4)$ is a factor of $x^4 + 4x^3 - ax^2 - bx + 24$. Also, $a + b = 29$. Find the value of b.

   (a) 7

   (b) 16

   (c) 22

   (d) 13

8. X and Y have their present ages in the ratio 6:7. 14 years ago, the ratio of the ages of the two was 4:5. What will be the ratio of their ages 21 years from now?

   (a) 7: 11

   (b) 9: 10

   (c) 8: 11

   (d) 11: 13

9. The equation $3x^2 + mx + n = 0$ has roots that are double that of the equation $x^2 + 10x + 12 = 0$. What is the value of m + n?

   (a) 104

   (b) 204

   (c) 102

   (d) 202

10. What is the smallest integral value of n for which $n^3 + 7n^2 - 50n - 336 > 0$

    (a) 8

    (b) 6

    (c) 7

    (d) None of the above

11. If α and β are the roots of the equation $x^2+7x+12 =0$, then the equation whose roots $(\alpha+\beta)^2$ and $(\alpha-\beta)^2$ will be

    (a) $x^2-14x+49 = 0$

    (b) $x^2-24x+144 = 0$

    (c) $x^2-50x+49 = 0$

    (d) $x^2-19x+49 = 0$

12. The value of 'k 'for system of equations $kx+2y = 5$ and $3x+y = 1$ has no solution is:

    (a) 5

    (b) 2/3

(c) 6

(d) 3/2

13. On the average, experienced person does 5 units of work while a fresh one 3 units of work daily, but the employer have to maintain the output at least 30 units of work per day. The situation can be expressed as

(a) $5x+3y \leq 30$

(b) $5x+3y \geq 30$

(c) $5x+3y = 30$

(d) None of these

14. The sum of money doubles itself in 10 years. The number of years it would be treble itself is:

(a) 25 years

(b) 15 years

(c) 20 years

(d) None

15. Arun purchased a vaccum cleaner by giving ₹1700 as cash down payment, which will be followed by five EMIs of ₹480 each. The vaccum cleaner can also be bought by paying ₹3900 cash. What is the approx. rate of interest p.a. (at simple interest) under this instalment plan?

(a) 18%

(b) 19%

(c) 22%

(d) 20%

16. Present Value of a five year annuity is Rs. 2,000. If the rate of interest is 8% p.a., what is the amount of each annuity payment?

(a) Rs.500.9

(b) Rs.463.8

(c) Rs.363.1

(d) Rs.486.4

17. Abdul has taken a loan from Bahadur at 7% p.a. The loan has to be repaid in three equal yearly instalments of Rs. 10,000 each. What is the amount of loan taken?

(a) Rs.25,467

(b) Rs.26,897

(c) Rs.26,243

(d) None of the above

18. A took a loan from B. The loan is to be repaid in annual installments of Rs. 2,000 each. The first instalment is to be paid three years from today and the last one is to be paid 8 years from today? What is the value of loan today, using a discount rate of eight percent?

(a) Rs.9,246

(b) Rs.7,927

(c) Rs.8,567

(d) None of the above

19. If the cost of capital be 12% per annum, then the Net Present Value (in nearest Rs.) from the given cash flow is given as

Year	0	1	2	3
Operating Profit (in thousand Rs.)	(100)	60	40	50

(a) Rs.34048

(b) Rs.34185

(c) Rs.51048

(d) Rs.21048

20. Let the operating profit of a manufacturer for five years is given as

Year	1	2	3	4	5	6
Operating Profit (in lakh Rs.)	90	100	106.4	107.14	120.24	157.35

(a) 9%

(b) 12%

(c) 11%

(d) 13%

21. If a sum triples itself in 15 years at simple rat of interest, the rate of interest per annum will be:

(a) 13%

(b) 13.3%

(c) 13.5%

(d) 18.0%

22. What will be population after 3 years when present population is 25, 000 and population increases at the rate of 3% in I year, at 4% in II year and 5% in III year?

(a) Rs.28,119

(b) Rs.29,118

(c) Rs.27, 000

(d) Rs.30, 000

23. The future value of an annuity of Rs.1500 made annually for five years at interest of 10% compounded annually is (Given that $(1.1)^5 = 1.61051$)

(a) Rs.9517.56

(b) Rs.9157.65

(c) Rs.9715.56

(d) Rs.9175.65

24. He effective rate of interest equivalent to the nominal rate of 7% converted monthly:

(a) 7.26%

(b) 7.22%

(c) 7.02%

(d) 7.20%

25. How much will be Rs.25,000 to in 2 years at compound interest if the rates for the successive years are at 4% and 5% per year

(a) Rs.27,300

(b) Rs.27,000

(c) Rs.27,500

(d) Rs.27,900

26. A box contains 3 pink caps, 2 purple caps and 4 orange caps. In how many ways they can be arranged so that the caps of the same colour come together. (Assume all caps of same colour are not identical)

(a) 1724

(b) 1728

(c) 1732

(d) 1764

27. ${}^{15}C_3 + {}^{15}C_{13}$ is equal to:

(a) ${}^{16}C_3$

(a) ${}^{30}C_{16}$

(c) ${}^{15}C_8$

(d) ${}^{15}C_{15}$

28. Tere are 12 questions to be answered in Yes or No. How many ways can these be answered?

(a) 1024

(b) 2048

(c) 4096

(d) None

29. In how many ways 3 Prizes can be distributed among 3 students equally

(a) 10

(b) 45

(c) 60

(d) 120

30. The sum of the first 3 terms in an AP is 18 and that of the last 3 is 28. If the AP has 13 terms, what is the sum of the middle three terms?

(a) 23

(b) 18

(c) 19

(d) None of the above

31. The ratio of sum of first n natural numbers to that of sum of cubes of first n natural numbers is

(a) 3:16

(b) n(n+1) / 2

(c) 2 / n(n+1)

(d) None of the above

32. If the sum of 'terms of an Arithmetic Progression is $2n^2$, the fifth term is.

(a) 20

(b) 50

(c) 18

(d) 25

33. The number of words that can be formed out of the letters of the word "ARTICLE" so that vowels occupy even places is

(a) 36

(b) 144

(c) 574

(d) 754

34. Let Z be the universal set for two sets – A and B. If n(A) = 300, n(B) = 400 and n (A ∩ B) = 200, then n (A' ∩ B') is equal to 400 provided n(Z) is equal to

(a) 900

(b) 800

(c) 700

(d) 600

35. In a group of students 80 can speak Hindi, 60 can speak English and 40 can speak Hindi and English both, then number of students is:

(a) 100

(b) 140

(c) 180

(d) 60

36. if $f(x) = x^2-1$ and $g(x) = 2x+3$ then gof (3)

(a) 71

(b) 61

(c) 41

(d) 19

37. $\int 2^{3x}.3^{2x}.5^{x}\,dx =$

(a) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(270)} + C$

(b) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(360)} + C$

(c) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(180)}+C$

(d) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(90)}+C$

38. Marginal cost and marginal revenue of a commodity is C'(x)=6+2x and R'(x)=30. Fixed cost is 0. Find the total profit.
    (a) $22x + 3x^2$
    (b) $22x - 3x^2$
    (c) $22x - x^2$
    (d) $x + 3x^2$
39. Find the value of $\int_0^1(2x-4)dx$
    (a) 3
    (b) -3
    (c) 0
    (d) 1
40. A total cost function of a company RXL ltd is $C(x) = 10+50x-30x^2+x^3/3$ Where x denotes the output. Find the output level at which the profit is maximum if price function is given by 450-30x
    (a) 30
    (b) 40
    (c) 50
    (d) 20
41. Find out the next term of the series 4, 25, 121, 289, _____
    (a) 529
    (b) 441
    (c) 625
    (d) None of the above
42. Which number should come next ➔ 7, 13, 13, 14, 19, 15 ?
    (a) 15
    (b) 25
    (c) 19
    (d) None of the above
43. Find out the wrong number. 2,10,18,54,162,486,1458
    (a) 18
    (b) 10
    (c) 54
    (d) 162

44. In a certain code, "Delhi is capital" is coded as "7 5 9", "capital are beautiful" is coded as "3 6 9", "Delhi is beautiful" is coded as "6 7 5", "Patna also capital" is coded as "9 2 4". What is code for "beautiful" ?

(a) 2

(b) 4

(c) 6

(d) 9

45. If 'SYSTEM' is coded as 131625 then 'TERMS 'will be coded as ?

(a) 62251

(b) 62451

(c) 64251

(d) 62415

46. Pointing to a photograph Lalita says, "He is the son of the only son of my grandfather." How is the man in the photograph related to Lalita?

(a) Brother

(b) Uncle

(c) Cousin

(d) Data is inadequate

47. Pointing to a photograph. Ram said, "He is the son of the only daughter of the father of my brother." How is Ram related to the man in the photograph?

(a) Nephew

(b) Brother

(c) Father

(d) Maternal Uncle

(48-49) Read the following information carefully and answer the questions given below ? There are six children playing football, namely P, Q, R, S, T and U. P and T are bothers, U is sister of T, R is the only son of P's uncle, Q and S are the daughters of the only brother of R's father

48. Ho many female players are there?

(a) one

(b) two

(c) three

(d) Four

49. How is S is related to P

(a) Uncle

(b) Sister

(c) Niece

(d) Cousin

50. Pointing towards photograph. Vinod said "she is the daughter of my wife's mother's only daughter ". How is Vinod is related to the girl in the Photograph?

(a) Cousin

(b) Uncle

(c) Father

(d) None

51. Kamal starts from point 'O' and moved towards North 2 km, then he turns right and moved 4 km again he turned towards North and walked up to 1 km reached at A. Find the distance between OA.

(a) 6

(b) 7

(c) 4

(d) 5

52. When a person faces north and walks 25 m right, and he turns left and walks 20 m and again he turns right and walks 25 m and turns right25 m and turns right and walks 40 m in which direction is he now from his starting point.

(a) North-West

(b) North –East

(c) South- East

(d) South-West

53. Sanjay started from his house towards west. After a walking a distance 15 km he turned to the right and walked 10 km, he again turned to the right and walked 5 km. After this he turns left at 135^0 and covered 10 km in which direction should he is going?

(a) South

(b) South-West

(c) South-East

(d) North –West

54. Raju Walked from A to B in the east 10 m, then he turns towards right and walked 3 m. Again, he turned to the right and walked 14 m. how far is from is she from point A?

(a) 4 feet

(b) 5 feet

(c) 12 feet

(d) 13 feet

55. Mamtha moved a distance of 75 m towards north, then she turns to the left and walked to about 25 m, turned left again and walks 80 m. Finally, she turns to the right at angle of 45^0. In which direction was she is moving finally?

(a) South-East

(b) South-West

(c) North-West

(d) North-East

56. Five students A, B, C, D, and E are standing in a row. D is right on the E; B is on the left of E but on the right of A. D is next to C on his left. The student in middle is

(a) B

(b) E

(c) C

(d) A

57. Five children are sitting in row. S is sitting next to P but not T. K is sitting next to R, who is sitting on the extreme left and t is not sitting next to K . Who are adjacent to S.

(a) K+P

(b) R+P

(c) Only P

(d) P and T

(58-60) Directions to solve

(a) p, Q, R, S, T, U, V and W are sitting round the circle and facing the centre.

(b) P is second to the right of T who is neighbour of R and V.

(c) S is not the neighbour of U.

(d) V is neighbour of U.

(e) Q is not between S and W. W is not between u and S

58. Who is immediate left of V?

(a) P

(b) U

(c) R

(d) T

59. What is the position of R

(a) Between P and T

(b) Second to the right of S

(c) to the immediate right of W

(d) inadequate data

60. Which are not following are not neighbour

(a) UV

(b) VT

(c) RV

(d) PQ

Part B: Statistics

61. Salaries of employees working in ABC limited is as follows:

Salaries (In thousands)	below 10	below 20	below 50	below 100	below 1000
Number of employees	28	34	65	84	123

Find the number of employees with salaries more than 50k?

(a) 65

(b) 84

(c) 39

(d) 58

62. Which of the following is not a criteria for ideal measure of central tendency?
    (a) It should be ambiguously defined
    (b) It should be simple to compute
    (c) It should be based on all the observations
    (d) None of these
63. Which of the following is not an example of continuous variable?
    (a) Temperature in India
    (b) Profit of Company X
    (c) Number of road accidents
    (d) A person's height
64. At ABC ltd, the average age of employees is 36. Average age of male employees is 38 and that of females is 32. Find the ratio of female to male in the company.
    (a) 1:3
    (b) 2:1
    (c) 1:2
    (d) 3:1
65. The mean height of girls in class in 162cm while for boys is 182cm. The ratio of number of girls: boys is 1:2. Find the mean height of the whole class
    (a) 170 cm
    (b) 180 cm
    (c) 154 cm
    (d) None of these
66. In the equation 4x+2y = 3, quartile deviation for y is 3. Find the quartile deviation for x.
    (a) 4.5
    (b) 6
    (c) 1.5
    (d) None of these
67. The Standard deviation is independent of change of
    (a) Scale
    (b) Origin
    (c) Both (a) and (b)
    (d) None of these
68. Find D6 for the following observations. 7, 9, 5, 4, 10, 15, 14, 18, 6, 20
    (a) 11.40
    (b) 12.40
    (c) 13.40
    (d) 13.80
69. If all the observations are decreased by 4, find the relation between new SD and old SD.

(a) New SD = Old SD/2

(b) New SD = Old SD - 2

(c) New SD = Old SD - 4

(d) Remains unchanged

70. Standard deviation of first n natural number is 2. What is the value of n?

(a) 7

(b) 6

(c) 5

(d) 8

71. Find the variance of 3x+2 if standard deviation of x is 4

(a) 9

(b) 160

(c) 16

(d) 144

72. if the variance of x = 148.6 and mean of x = 40 , then the coefficient of variation is

(a) 37.15

(b) 30.48

(c) 33.75

(d) None of these

73. The average of 10 observations is 14.4. If the average of first four observations is 16.5. The average of remaining 6 observations is :

(a) 13.6

(b) 13.0

(c) 13.2

(d) 12.5

74. If the rates return 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%

75. For a 4 x 7 classification of bivariate data, the maximum number of conditional distributions is :

(a) 11

(b) 28

(c) 35

(d) None

76. The coefficients of correlation between two variables x and y is the simple _____ of two regression coefficients.

(a) Harmonic Mean

(b) Arithmetic Mean

(c) Geometric Mean

(d) None of the above

77. There are two equations: m + 3p = 2 and 6n + 2q = 1. Correlation coefficients for p and q is 0.5. Find the correlation coefficients of m and n

(a) 0.6

(b) 0.5

(c) -0.5

(d) None of these

78. If r=0, regression lines are:

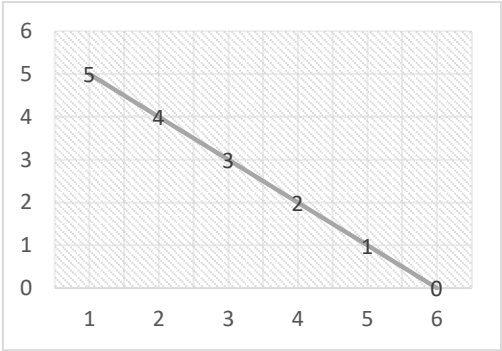
(a) Perpendicular

(b) Parallel

(c) They coincide

(d) Cannot be determined

79. Below scatter diagram shows what type of correlation



(a) Perfect negative correlation

(b) Negative correlation

(c) Positive correlation

(d) Perfect positive correlation

80. Number of defects in clothes a garments showroom will form a

(a) Poisson distribution

(b) Normal distribution

(c) Binomial distribution

(d) Cannot be determined

81. If X and Y are two random variables and if E(X) =3 and E(Y) = 6, then E(XY) = ?

(a) 3

(b) 6

(c) 18

(d) 24

82. An unbiased coin is tossed 6 times. Find the probability that the tosses result in heads only,
    (a) 1/64
    (b) 5/64
    (c) 10/64
    (d) None of these
83. Find the two numbers if AM and GM is 10 and 6 respectively
    (a) 6, 6
    (b) 12, 8
    (c) 9, 4
    (d) 18, 2
84. Probability distribution may be
    (a) Discrete
    (b) Continuous
    (c) Infinite
    (d) (a) or (b)
85. In a certain Poisson frequency distribution, the probability corresponding to two success is half the probability corresponding to three successes. The mean of the distribution is
    (a) 6
    (b) 12
    (c) 3
    (d) 2.45
86. The normal curve is
    (a) Positively skewed
    (b) Negatively skewed
    (c) Symmetrical
    (d) All these
87. An example of a bi-parametric discrete Probability distribution is
    (a) Binomial distribution
    (b) Poisson Distribution
    (c) Normal Distribution
    (d) Both (a) and (b)
88. For a normal distribution Q1 = 54.32 and Q3 = 78.86, then the median of the distribution is
    (a) 12.17
    (b) 39.43
    (c) 66.69
    (d) None of these
89. What is the mean of X having the following density function f(x) = $\frac{1}{4\sqrt{2\prod}} e^{-\frac{(x-10)^2}{32}}$ for -∞< x <∞

(a) 10

(b) 4

(c) 40

(d) None of these

90. In a Binomial Distribution B (n, p), n= 4, then P (x=2) = 3 P (x= 3) find P

(a) 1/3

(b) 2/3

(c) 6/4

(d) 4/3

90. One card is drawn from a pack of 52 , what is the probability that is a king or queen ?

(a) 11/13

(b) 2/13

(c) 1/13

(d) None of these

91. The probability that a leap year has 53 Wednesday is

(a) 2/7

(b) 5/3

(c) 2/3

(d) 1/7

92. A coin is tossed six times, then the probability of obtaining heads and tails alternatively is

(a) ½

(b) 1/64

(c) 1/32

(c) 1/16

93. Two different dice are thrown simultaneously, then the probability, that the sum of two numbers appearing on the top of dice 9 is

(a) 8/9

(b) 1/9

(c) 7/9

(d) None of these

94. The probability distribution of the demand for a commodity is given below

Demand (x)	5	6	7	8	9	10
Probability: P(x)	0.05	0.10	0.30	0.40	0.10	0.05

The expected value of demand will be :

(a) 7.55

(b) 7.85

(c) 1.25

(d) 8.35

95. 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 each bag. Then the probability that one Red and One Balck is

    (a) 12/72

    (b) 25/72

    (c) 37/72

    (d) 13/72

96. If Laspyres index number is 250 and Paschees index number is 160, them Fishers Index number is

    (a) 200

    (b) 120

    (c) 150

    (d) 170

97. Which is called an ideal index number

    (a) Laspyres Index number

    (b) Pasches Index number

    (c) Fishers Index number

    (d) Marshall- Edgeworth Index number

98. The circular test is an extension of

    (a) The time reversal test

    (b) The factor reversal test

    (c) The Unit test

    (d) None of these

99. Circular test is satisfied by

    (a) Laspyres Index number

    (b) Paschhes index number

    (c) The simple geometric mean of price geometric mean of price relatives and price relatives and weighted aggregative with fixed weights.

    (d) None of these

100. If the price of a commodity in a place have decreased by 30% over the based period places, then the index number of that place is

    (a) 30

    (b) 60

    (c) 70

    (d) 80

MOCK TEST PAPER 1

FOUNDATION COURSE

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours **Marks: 100**

Part A: Business Mathematics and Logical Reasoning

1. Find the value of $\left[\log_{10}\sqrt{25} - \log_{10}\left(2^3\right) + \log_{10}\left(4\right)^2\right]$
   (a) x
   (b) 10
   (c) 1
   (d) None
2. If A: B = 2:5, then (10A + 3B): (5A + 2B) is equal to
   (a) 7:4
   (b) 7:3
   (c) 6:5
   (d) 7:9
3. The ratio compounded of 4:5 and sub-duplicate of a:9 is 8:15. Then value of "a" is
   (a) 2
   (b) 3
   (c) 4
   (d) 5
4. If ½ , 1/3 ,1/5 and 1/x are in proportion , then the value of x will be
   (a) 15/2
   (b) 6/5
   (c) 10/3
   (d) 5/6
5. If $P = x^{1/3} + x^{-1/3}$ then find value of $3p^3 - 9p$
   (a) 3
   (b) ½(x+1/x)
   (c) (x+1/x))
   (d) 2((x+1/x))
6. Fourth proportional to x, 2x, (x+1) is:
   (a) (x+2)
   (b) (x-2)
   (c) (2x+2)

(d) (2x-2)

7. The value of $\frac{\left(3^{n+1}+3^{n}\right)}{\left(3^{n+3}-3^{n+1}\right)}$ is equal to

(a) 1/5

(b) 1/6

(c) ¼

(d) 1/9

8. The value of $\frac{x^2-(y-z)^2}{(x+z)^2-y^2}+\frac{y^2-(x-z)^2}{(x+y)^2-z^2}+\frac{z^2-(x-y)^2}{(y+z)^2-x^2}$

(a) 0

(b) 1

(c) -1

(d) ∞

9. If abc = 2 then the value of $\frac{1}{1+a+2b^{-1}}+\frac{1}{1+\frac{1}{2}b+c^{-1}}+\frac{1}{1+c+a^{-1}}$ is

(a) 1

(b) 2

(c) 3

(d) 1/2

10. If $\frac{3x-2}{5x-6}$ is the duplicate ratio of 2/3 then the value of 'x ' is

(a) 2

(b) 6

(c) 5

(d) 9

11. If α and β are the roots of the equation $x^2 + 7x + 12 = 0$, then the equation whose roots $(\alpha + \beta)^2$ and $(\alpha - \beta)^2$ will be:

(a) $x^2 – 14x + 49 = 0$

(b) $x^2 – 24x + 144 = 0$

(c) $x^2 – 50x + 49 = 0$

(d) $x^2 – 19x + 144 = 0$

12. Roots of the equation $2x^2+3x+7 = 0$ are α and β then the value of $\alpha\beta^{-1}+\beta\alpha^{-1}$ is

(a) 2

(b) 3/7

(c) 7/2

(d) -19/14

13. On solving the inequalities $5x + y \leqq 100$, $x + y \leq 60$, $x \geq 0$, $y \geq 0$, we get the following situation:
    (a) (0,0), (20,0), (10,50), & (0,60)
    (b) (0,0), (60,0), (10,50), & (0,60)
    (c) (0,0), (20,0), (0,100) & (10,50)
    (d) none of these

14. The rules and regulations demand that the employer should employ not more than 5 experienced hands to 1 fresh one and this fact is represented by (Taking experienced person as x and fresh person as y)
    (a) $y \geq \frac{x}{5}$
    (b) $5y \leq x$
    (c) $5y \geq x$
    (d) none of these

15. In what time will be a sum of money doubles itself at 6.25% p.a simple interest ?
    (a) 5 years
    (b) 8 years
    (c) 12 years
    (d) 16 years

16. Mr. X invests ₹ 10,000 every year starting from today for next 10 years suppose interest rate is 8% per annum compounded annually. Calculate future value of the annuity: (Given that $(1+0.08)^{10} = 2.158925$]
    (a) ₹ 156454.88
    (b) ₹ 144865.625
    (c) ₹ 156554.88
    (d) none of these

17. The difference between the simple and compound interest on a certain of 3 years at 5% p.a is ₹ 228.75. The compound interest on the sum of for 2 years at 5% per annum is
    (a) ₹ 3175
    (b) ₹ 3075
    (c) ₹ 3275
    (d) ₹ 2975

18. How much time would the simple interest on a certain sum be 0.125 times the principal at 10% per annum
    (a) $1\frac{1}{4}$ years
    (b) $1\frac{3}{4}$ years
    (c) $2\frac{1}{4}$ years
    (d) $2\frac{3}{4}$ years

19. The time in by which a sum of money is 8 times of itself if it doubles itself in 15 years interest compounded annually.
    (a) 42 years
    (b) 43 years
    (c) 45 years
    (d) 46 years
20. Present value of a scooter is ₹7290, if its value decreases every year by 10% then the value before 3 years is equal to
    (a) 10,000
    (b) 10,500
    (c) 20,000
    (d) 20,500
21. Find the effective rate of interest at 10% p.a when the interest is payable quarterly.
    (a) 10.38%
    (b) 5%
    (c) 5.04%
    (d) 4%
22. The difference between in simple interest on a sum invested of ₹1500 for 3 years is ₹18. The difference in their rate is
    (a) 0.4
    (b) 0.6
    (c) 0.8
    (d) 0.10
23. What will be the population after 3 years . When the population increases at the rate 3 % in I year, 4 % in II year and 5% in III year.
    (a) 28,119
    (b) 29,118
    (c) 27,000
    (c) 30,000
24. If ₹10,000 is invested at 8 % per annum, then compounded quarterly.Then value of investment after 2 years is
    (a) ₹11,716.59
    (b) ₹10,716.59
    (c) ₹12,715.59
    (d) none of these
25. In how many years will a sum of money become double at 5% p.a compound interest
    (a) 14 years
    (b) 15 years
    (c) 16 years

(d) 14.3 years

26. The future value of an annuity of ₹ 1,000 is made annually for 5 years at interest rate of 14% compounded annually [Given that $(1.14)^5 = 1.92541$] is _____

(a) ₹ 5610

(b) ₹ 6610

(c) ₹ 6160

(d) ₹ 5160

27. The number of ways of arranging 6 boys and 4 girls in a row so that all 4 girls are together is:

(a) 6!. 4!

(b) 2 (7! 4!)

(c) 7! 4!

(d) 2. (6! 4!)

28. $15C_3+15C_{r+3}$ then 'r' is equal to

(a) 2

(b) 3

(c) 4

(d) 5

29. If ${}^nP_2 = 20\ ({}^nP_2)$ then the value of 'n' is _____

(a) -2

(b) 7

(c) -2 and 7 both

(d) None of these.

30. How many different words can be formed with the letters of the word "LIBERTY"

(a) 4050

(b) 5040

(c) 5400

(d) 4500

31. If x, y and z are the terms in G.P , then the term x^2+y^2 , xy + yz , $y^2+z^2$are in

(a) AP

(b) GP

(c) HP

(d) none of the above

32. In a GP .if fourth term is 3 then the product of first seven terms is

(a) 3^5

(b) 3^7

(c) 3^6

(d) 3^8

33. In a G.P. If the third term of a GP is $\frac{2}{3}$ and 6th term is $\frac{2}{81}$, then the first term is

(a) 6

(b) 1/3

(c) 9

(d) 2

34. Sum upto infinity series $\frac{1}{2}+\frac{1}{3^2}+\frac{1}{2^3}+\frac{1}{3^4}+\frac{1}{2^5}+\ldots..$

(a) 19/24

(b) 24/19

(c) 5/24

(d) none of these

35. If f(x) = $\frac{2+x}{2-x}$, then f^{-1} (x) :

(a) $\frac{2(x-1)}{x+1}$

(b) $\frac{2(x+1)}{x-1}$

(c) $\frac{x+1}{x-1}$

(d) $\frac{x-1}{x+1}$

36. If f : R $\rightarrow$ R is a function, defined by $f(x) = 2^x$; then f(x+y) is

(a) f(x) +f(y)

(b) f(x). f(y)

(c) f(x) ÷f(y)

(d) none

37. If f(x) = x+2, $g(x) = 7^x$, than gof(x) = ____

(a) $7^x.x+2.7^x$

(b) 7^x+2

(c) $49(7^x)$

(d) none of these

38. Given x = 2t + 5; $y = t^2-2$, then $\frac{dy}{dx}$ is calculated as:

(a) t

(b) 1/t

(c) -1/t

(d) none of these

39. $\int e^x \left(x^2 + 2x\right) dx$

(a) $x^2.e^x+c$

(b) $x.e^x+c$

(c) $-x.e^x+c$

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

40. if xy =1 then $y^2 + \frac{dy}{dx} = ?$

(a) 1

(b) 0

(c) 2

(d) none of these

41. The missing term of the series 11, 10 __27, 66.5, 198.5

(a) 14

(b) 16

(c) 21

(d) 19

42. What comes at last place in R, U, X, A, D, ?

(a) E

(b) F

(c) G

(d) H

43. If Z = 52 and ACT = 48, then BAT will be equal to

(a) 39

(b) 41

(c) 44

(d) 46

44. If ROSE is coded as 6821, CHAIR is coded as 73456 and PREACH is coded as 961473, what will be the code for SEARCH?

(a) 246173

(b) 214673

(c) 214763

(d) 216473

45. If E = 5 and **READ** is coded as 7, then what is the code of **'DEAR'** ?

(a) 6

(b) 7

(c) 8

(d) 9

46. M is to the East of D, F is to the South of D and K is to the West of F. M is in which direction with respect to K?

    (a) South-West

    (b) North-West

    (c) North-East

    (d) South-East

47. A cyclist goes 30 km to North and then turning to goes 40 km. Again he turns to his right and goes 20 km. After this he turns to his right and goes 40 km. How far is the from his starting point?

    (a) 0 km.

    (b) 10 km.

    (c) 25 km.

    (d) 40 km.

48. A boy from his home, first walks 20 m in North-West direction then 20 m in South - West direction. Next, he walks 20m South - East direction. Finally, he turns towards his house. In which direction is he moving?

    (a) North - West

    (b) North-East

    (c) South – West

    (d) South – East

49. Raju leaves his house and walks 12 km towards North. He turns right and walks another 12 km. He turns right, walks 12 km more and turns left to walk 5 km. How far is he from his home and in which direction?

    (a) 7 km east

    (b) 10 km east

    (c) 17 km east

    (d) 24 km eas

50. A child goes 50 meter towards South and then turning to his right, he goes 50 meter. Then, turning to his left, he goes 30 meter. Again he turns to his left and goes 50 meter. How far is he from his initial position?

    (a) 30 m

    (b) 40 m

    (c) 50 m

    (d) 80 m

51. D is daughter of E . A is son of D . C is brother of A and B is sister of A . F is brother of D . How F is related to B ?

    (a) Father-in -Law

    (b) Uncle

    (c) Brother

    (d) Mother-in-law

52. Introducing a boy a girl said, “He is the son of the daughter of the father of my uncle “. Who is the boy to the girl ?

(a) Brother

(b) Nephew

(c) Uncle

(d) Son-in-law

53. It is given that “A is the mother of B; B is the sister of C; C is the father of D”. How is A related to D?

(a) Mother

(b) Grandmother

(c) Aunt

(d) Sister

54. Rita told Mani, "The girl I met yesterday at the beach was the youngest daughter of the brother-in-law of my friend's mother." How is the girl related to Rita's friend ?

(a) Cousin

(b) Daughter

(c) Niece

(d) Aunt

55. Sanjay has three daughters, and each daughter has a brother. How many male members are there in the family?

(a) 4

(b) 2

(c) 3

(d) 1

Directions (Q 56-57): Study the following information carefully and answer the questions given below.

I. P, Q, R, S, T, U and V are sitting on a wall and all of them are facing West.

II. S is on the immediate left of R.

III. T is at an extreme end and has Q as his neighbor.

IV. V is between Q and U.

V. S is sitting third from the north end.

56. Who is sitting to the left of S ?

(a) Q

(b) U

(c) T

(d) R

57. Which of the following pairs of people are sitting at the extreme ends ?

(a) QV

(b) PR

(c) TP

(d) ST

58. Five girls are sitting on a bench to be photographed. Seema is to the left of Rani and to the right of Bindu. Mary is to the right of Rani. Reeta is between Rani and Mary. Who is sitting immediate right to Reeta ?

(a) Bindu

(b) Rani

(c) Mary

(d) Seema

(Directions 59-60) . Four ladies A, B, C and D and four gentlemen E, F, G and H are sitting in circle around a table facing each other

(i) No two ladies or gentlemen are sitting side by side

(ii) C, who is sitting between G and E , facing D

(iii) F is between D and A and facing G

(iv) H is to the right of B

59. Who is immediate neighbor of B ?

(a) G and H

(b) E and F

(c) A and B

60. Who is sitting left of A

(a) F

(b) E

(c) C

(d) D

Part B: Statistics

61. Median of a distribution can be obtained from

(a) Frequency polygon

(b) Histogram

(c) ogives

(d) None of these.

62. Cost of sugar in a month under the heads raw Materials, labour, direct production and others were 12, 20, 35 and 23 units respectively. What is the difference between the central angles for the largest and smallest components of the cost of sugar?

(a) 72^{o}

(b) 48^{o}

(c) 56^{o}

(d) 92^{o}

63. In a study relating to the labourers of a jute mill in West Bengal, the following information was collected.

'Twenty per cent of the total employees were females and forty per cent of them were married. Thirty female workers were not members of Trade Union. Compared to this, out of 600 male workers 500 were members

of Trade Union and fifty per cent of the male workers were married. The unmarried non-member male employees were 60 which formed ten per cent of the total male employees. The unmarried non-members of the employees were 80'. On the basis of this information, the ratio of married male non-members to the married female non-members is

(a) 1: 3

(b) 3: 1

(c) 4: 1

(d) 5: 1

64. For the non-overlapping classes 0—19 , 20—39 , 40—59 the class mark of the class 0—19 is

(a) 0

(b) 19

(c) 9.5

(d) none of these

65. For open-end classification, which of the following is the best measure of central tendency?

(a) AM

(b) GM

(c) Median

(d) Mode

66. The quartiles of a variable are 45, 52 and 65 respectively. Its quartile deviation is

(a) 10

(b) 20

(c) 25

(d) 8.30

67. If x and y are related by y = 2x+ 5 and the SD and AM of x are known to be 5 and 10 respectively, then the coefficient of variation is

(a) 25

(b) 30

(c) 40

(d) 20

68. For a moderately skewewd distribution, the median is twice the mean , then the mode is ____ times the median.

(a) 3

(b) 2

(c) $\frac{2}{3}$

(d) $\frac{3}{2}$

69. If average marks for agroup of 30 girls is 80 , a group of boys is 70 and combined average is 76, then how many boys are in the group ?

(a) 21

(b) 20

(c) 22

(d) 19

70. The median value of the set of observations 48, 36, 72, 87, 19, 66, 56 and 91

(a) 53

(b) 87

(c) 61

(d) 19

71. If two vriables a and b are related by c= ab then GM.of c =

(a) GM of a +GM of b

(b) GM of a×GM of b

(c) GM of a -GM of b

(d) GM of a /GM of b

72. If there are three obsewrvations 15, 20,25 then the sum of devation of the observations from their AM is.

(a) 0

(b) 5

(c) -5

(d) 10

73. 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

74. If the Arithmetic mean between two numbers is 64 and the Geometric mean between them is 16. The Harmonic Mean between them is _____.

(a) 64

(b) 4

(c) 16

(d) 40

75. The regression coefficients remain unchanged due to

(a) Shift to origin

(b) Shift to scale

(c) Always

(d) Never

76. If the plotted points in a scatter diagram lie from upper left to lower right, then the correlation is
    (a) Positive
    (b) Zero
    (c) Negative
    (d) none of these.
77. The covariance between two variables is
    (a) Strictly positive
    (b) Strictly negative
    (c) Always 0
    (d) Either positive or negative or zero.
78. If the coefficient of correlation between two variables is –0 9, then the coefficient of determination is
    (a) 0.9
    (b) 0.81
    (c) 0.1
    (d) 0.19.
79. For a probability of a random variable x is given below :

X:	1	2	4	5	6
P:	0.15	0.25	0.2	0.3	0.1

    What is the Standrard deviation of x ?
    (a) 1.49
    (b) 1.56
    (c) 1.69
    (d) 1.72
80. Given that for two events A and B, P (A) = 3/5, P (B) = 2/3 and P (A) = 3/4, what is P (A/B)?
    (a) 0.655
    (b) 13/60
    (c) 31/60
    (d) 0.775
81. If 2x + 3y + 4 = 0 and V(x) = 6 then V(y) is
    (a) 8/3
    (b) 9
    (c) 9
    (d) 6
82. X and Y stand in a line with 6 other people. What is the probability that there are 3 persons between them?
    (a) 1/5
    (b) 1/6
    (c) 1/7

(d) 1/3

83. Four unbiased coins are tossed simultaneously. The expected number of heads is :

X:	0	1	2	3	4
P(x)	1/16	4/16	6/16	4/16	1/16

(a) 1

(b) 2

(c) 3

(d) 4

84. Assume that the proabailityfor rain on a day is 0.4 . An umbrella salesman can earn ₹ 400 per day in case of rain on that day will lose ₹ 100 per day if there is no rain . The expected eranings (in ₹) per day of the salesman is

(a) 400

(b) 200

(c) 100

(d) 0

85. The covraince 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

86. What is the probability of getting 3 heads if 6 unbaised coins are tossed simultaneously ?

(a) 0.3125

(b) 0.25

(c) 0.6825

(d) 0.50

87. The mode of the binomial distribution for which the mean is 4 varaince 3 is equal to ?

(a) 4

(b) 4.5

(c) 4.25

(d) 4.1

88. For Poisson Distribution :

(a) Mean and Standard Deviation are equal

(b) Mean and Vraince are equal

(c) Standard Devaiation and Variance are equal

(d) Both (a) and (b) are equal

89. If avaraiate x has , mean>variance , then the distribution will be ____

(a) Binomial Distribution

(b) Poisson Distribution

(c) Normal Distribution

(d) T-Distribution

90. An example of a bi-parametric continuous probability distribution

(a) Binomial

(b) Poisson

(c) Normal

(d) Chi-square

91. For a poisson variate X, P(x=2) =3 P(x=4) , then the standard deviation of X is

(a) 2

(b) 4

(c) $\sqrt{2}$

(d) 3

92. What is the mean of X having the following density function ?

$$f(x) = \frac{1}{4\sqrt{2\prod}} e^{-\frac{(x-10)^2}{32}} \text{ for } -\infty < x < \infty$$

(a) 10

(b) 4

(c) 40

(d) none of these

93. The divations are minimum when taken from

(a) Mean

(b) Median

(c) Mode

(d) GM

94. Histogram is useful to determine graphically the value of

(a) Arithmetic Mean

(b) Median

(c) Mode

(d) HM

95. If x and y are related as 3x-4y= 20 then the Quartile divation of x is 12 , then the Quartile deviation of y is :

(a) 14

(b) 15

(c) 16

(d) 9

96. The index number for the year 2012 taking 2011 as the base year from the data given below by using simple average of price relative method is

Commodity	A	B	C	D	E
Price in 2011	115	108	95	80	90
Price in 2012	125	117	108	95	95

(a) 112

(b) 117

(c) 120

(d) 111

97. Suppose a business executive was earning ₹ 2,050 in the base period. What should be his salary in the current period if his standard of living is to remain the same? Given $\sum W = 25$ and $\sum IW = 3544$:

(a) ₹ 2096

(b) ₹ 2906

(c) ₹ 2106

(d) ₹ 2306

98. Find the Paasche's Index number for prices from the following

Commodity	Base year		Current year	
	Price	Commodity	Price	Commodity
A	1	6	3	5
B	3	5	8	5
C	4	8	10	6

(a) 261.36

(b) 265.48

(c) 274.32

(d) 282

99. Index numbers are not helpful in

(a) Framining Economic Policies

(b) Revealing Trend

(c) Forecasting

(d) Identifying errors

100. The weight average of price relatives of commodities when the weight is equal to the value of commodities in base year yields _____index number

(a) Fisher's Ideal

(b) Laspyres

(c) Paasches

(d) Marshall-Edgeworth

MOCK TEST PAPER II

FOUNDATION COURSE

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours **Marks: 100**

Part A: Business Mathematics and Logical Reasoning

1. If x: y = 2:3, then (5x+2y): (3x-y) =

   (a) 19: 3

   (b) 16:3

   (c) 7:2

   (d) 7:3

2. If $(25)^{150} = (25x)^{50}$, then the value of x will be:

   (a) 5^3

   (b) 5^4

   (c) 5^2

   (d) 5

3. The value of $\left(\frac{y^a}{y^b}\right)^{a^2+ab+b^2} \times \left(\frac{y^b}{y^c}\right)^{b^2+bc+c^2} \times \left(\frac{y^c}{y^a}\right)^{c^2+ca+a^2}$ is equal to

   (a) y

   (b) -1

   (c) 1

   (d) None of these

4. If $x = \log_{24} 12, y = \log_{36} 24, z = \log_{48} 36$ then $xyz + 1 =$

   (a) 2xy

   (b) 2xz

   (c) 2yz

   (d) 2

5. A person has asset worth of ₹ 1,48,200. He wish to divide it amongst his wife, son and daughter in the ratio 3:2:1respectively . From this assets share of his wife son will be :

   (a) ₹ 24,700

   (b) ₹ 49, 400

   (c) ₹ 74,100

   (d) ₹ 37,050

6. X, Y, Z together starts a business, if X invests 3 times as much as Y invests and Y invests two third of what Z invests, then the ratio of capitals of X,Y, Z is

   (a) 3:9:2

   (b) 6:3:2

   (c) 3:6:2

   (d) 6:2:3

7. If the ratio of the roots of the equation $4x^2-6x+p=0$ is 1:2 then the value of p is:

   (a) 1

   (b) 2

   (c) -2

   (d) -1

8. If roots of equation $x^2+x+r= 0$ are α and β and $\propto^3+\beta^3= -6$. Find the value of 'r'

   (a) -5/3

   (b) 7/3

   (c) -4/3

   (d) 1

9. If $2^{x+y} = 2^{2x+y} = \sqrt{8}$ then the respective values of x and y are ___

   (a) 1, ½

   (b) ½, 1

   (c) ½, ½

   (d) None of these

10. If $a^2+ b^2 = 45$ and ab = 18, the $\frac{1}{a}+\frac{1}{b}$ is:

    (a) ± 1/3

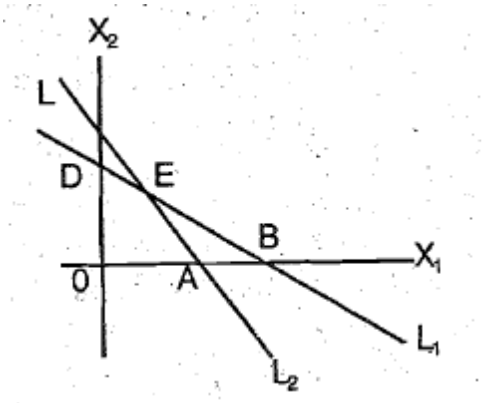
    (b) ±2/3

    (c) ±1/2

    (d) None of these

11. The common region represented by the following in qualities

    $L_1: x_1+x_2< 4$: L_2: $2x_1-x_2>6$



(a) OABC

(b) outside of OAB

(c) Δ BCE

(d) Δ ABE

12. An employer recruits experienced (x) and fresh workmen(y) for his under the condition that he can not employ more than 11 people and y can be related by the inequality.

(a) $x+y \neq 11$

(b) $x+y \leq 11, x \geq 0, y \geq 0$

(c) $x+y \geq 11, x \geq 0, y \geq 0$

(d) none of these

13. $6x + y \geq 18, x + 4y \geq 12, 2x + y \geq 10$ On solving the inequalities; we get:

(a) (0, 18), (12, 0), (4, 2) & (7, 6)

(b) (3, 0), (0, 3), (4, 2) & (7, 6)

(c) (5, 0), (0, 10), (4, 2) & (7, 6)

(d) (0, 18), (12, 0), (4, 2), (0, 0) & (7, 6)

14. Find the effective rate of interest if an amount of 30,000 deposited in a bank. For 1 year at the rate of 10% per annum compounded semi-annually.

(a) 10.05%

(b) 10.10%

(c) 10.20%

(d) 10.25%

15. The present population of a town is 25,000. If it grows at the rate of 4%, 5%, 8% during 1st year, 2nd year, 3rd year respectively. Then find the population after 3 years.

(a) 29,484

(b) 29,844

(c) 29,448

(d) 28,944

16. The present value of a scooter is ₹ 7290. The rate of depreciation is 10%. What was its value 3 years ago?

(a) 10000

(b) 10010

(c) 9990

(d) 12000

17. The rate of interest for the first 2 year is 3% per annum, for next 3 years is 8% per annum and for the period beyond 5 years, 10% per annum. If a man gets ₹ 1520 as a simple interest for 6 years; how much money did he deposit?

(a) ₹ 3800

(b) ₹ 3000

(c) ₹ 4000

(d) None of these

18. Suppose your parent decides to open a PPF account in a bank towards your name with ₹ 10,000 every year staring from today for next 15 years. When you receive and get 8.5% per annum interest rate compounded annually. What is the present value of this annuity?

(a) 83,042

(b) 80,900

(c) 90,100

(d) None of these

19. In what rate % per annum will ₹ 1,000 amounts to ₹ 1331 in 3 years? The interest is compounded yearly is:

(a) 10%

(b) 12%

(c) 11%

(d) None of these

20. The difference between simple interest and compound interest on a certain for 2 years at 10% p.a. is ₹ 10. Find the Sum

(a) ₹ 1010

(b) ₹ 1095

(c) ₹ 1000

(d) ₹ 990

21. The future value of an annuity of ₹ 5,000 is made annually for 8 years at interest rate of 9% compounded annually [Given that (1.09) =1.99256] is

(a) ₹ 55,142.22

(b) ₹ 65,142.22

(c) ₹ 65,532.22

(d) ₹ 57,425.22

22. In how many years will a sum of money becomes four times at 12% p.a. simple interest?

(a) 18 years

(b) 21 years

(c) 25 years

(d) 28 years

23. The effective rate of interest does not depend upon

(a) Amount of Principal

(b) Amount of Interest

(c) Number of Conversion periods

(d) None of these

24. Find the effective rate of interest at 10% p.a. When interest is payable quarterly.

(a) 10.38%

(b) 5%

(c) 5.04%

(d) 4%

25. In simple interest if the principle is ₹ 2,000 and the rate and time are roots of the equation

$x^2-11x+30 = 0$

(a) ₹ 500

(b) ₹ 600

(c) ₹ 700

(d) ₹ 800

26. Determine the present value of perpetuity of ₹ 50,000 per month at the rate interest 12% per annum is

(a) ₹ 45,00,000

(b) ₹ 50,00,000

(c) ₹ 55,00,000

(d) ₹ 60,00,000

27. Find the number of even numbers greater than 100 that can be formed with the digits 0,1,2,3?

(a) 10

(b) 15

(c) 20

(d) None of these

28. In how many ways can the letters of the word "ALEGEBRA" be arranged without changing the relative order of the vowels?

(a) 82

(b) 70

(c) 72

(d) None of these

29. In how many ways can the letters of the word "DIRECTOR" be arranged so that the three vowels are never together?

(a) 180

(b) 18,000

(c) 18,002

(d) None of these

30. The first and fifth term of an A.P. of 40 terms are -29 and -15 respectively. Find the sum of all positive terms of this A.P.

(a) 1605

(b) 1705

(c) 1805

(d) None of these

31. If the common difference of an AP equals to the first term, then the ratio of its m^{th} term and n^{th} term is:

(a) n:m

(b) m: n

(c) $m^2:n^2$

(d) None of these

32. Find the value of 1 + 2 + 3 + ---------- + 105

(a) 5000

(b) 5560

(c) 5565

(d) None of these

33. In a G. P sixth term is 729 and the common ratio is 3, then the first term of G.P is

(a) 2

(b) 3

(c) 4

(d) 7

34. The number ways in which 4 persons can occupy 9 vacant seats is

(a) 6048

(b) 3024

(c) 1512

(d) 4536

35. If A = {1, 2,3}, B = {3,4} and C = {4, 5,6} ,then $A \times (B \cap C)$ =

(a) {(1,4), (2,4), (3,4)}

(b) {(4,4), (4,3), (4,1)}

(c) {(3, 4), (2, 4)}

(d) {(1, 2), (1, 4), (1, 6), (3, 4)}

36. Let R be a relation on N defined by x +2y = 8. The domain of R is:

(a) {2, 4, 8}

(b) {2, 4, 6, 8}

(c) {2, 4, 6}

(d) {1, 2, 3, 4}

37. The domain of the function $f(x) = \frac{x^2 + 3x + 5}{x^2 - 5x + 4}$ is:

(a) R

(b) R –{1, 4}

(c) R – {1}

(d) (1, 4)

38. If $y = x^x$, then $\frac{dy}{dx}$ is :

(a) $x^x (2 + \log x)$

(b) $x^x \log(ex)$

(c) $x^x \log\left(\frac{e}{x}\right)$

(d) None of these

39. If $y = \sqrt{x} + \frac{1}{\sqrt{x}}$ then $2x\frac{dy}{dx}$ is

(a) $\sqrt{x} - \frac{1}{\sqrt{x}}$

(b) $\sqrt{x} + \frac{1}{\sqrt{x}}$

(c) $x - \frac{1}{x}$

(d) None of these

40. Evaluate $\int 2^x x^2 dx$

(a) $\frac{2^x.x^2}{2} - \frac{x.2^{x+1}}{(\log 2)^2} + \frac{2^{x+1}}{(\log 2)^2} + c$

(b) $\frac{2^x.x^3}{3} - \frac{x^2.2^{x+1}}{(\log 2)^2} + \frac{2^{x+1}}{(\log 3)^2} + c$

(c) $\frac{2^x.x^2}{3} - \frac{x^3.2^x}{3} + \frac{2^{x+1}}{(\log 2)^3} + c$

(d) None of these

41. Find missing term of the series 2, 3,3,5, 10, 13, ? , 43, 172, 177

(a) 23

(b) 38

(c) 39

(d) 40

42. Find wring number of the series 1,5,5,9,7,11,11,15,12,17

(a) 11

(b) 12

(c) 17

(d) 15

43. Find missing term of the letter series A, CD, GHI, UVWXY

(a) LMNO

(b) MNO

(c) MNOP

(d) NOPQ

44. In a certain code TELEPHONE is written as ENOHPELET. How is ALIGATOR written in that code?

(a) ROTAGILA

(b) ROTAGAIL

(c) ROTAGILE

(d) ROTEGILA

45. In a certain Code, 'CLOUD' is written as 'GTRKF'. How is 'SIGHT' written in that code?

(a) UGHHT

(b) UHJFW

(c) WFJGV

(d) WGJHV

46. Raju starts walking straight towards East. After walking 75 metres, he turns to the left and walks 25 metres straight. Again, he turns to the left, walks a distance of 40 metres straight, again he turns to the left and walks a distance of 25 metres. How far is he from the starting point?

(a) 25 meters

(b) 50 meters

(c) 115 meters

(d) 35 meters

47. Ravi started from the house towards West. After walking a distance of 30 metres, he turned towards right and walked 20 metres. He then turned left and moving a distance of 10 metres, turned to his left again and walked 40 metres. He now turned to the left and walked 5 metres. Finally, he turned to his left. In which direction was he walking now?

(a) North

(b) South

(c) East

(d) South-West

48. I am facing South. I turn right and walk 20 meters. Then I turn right again and walk 10 meters. Then I turn left and walk 10 meters and then turning right walk 20 meters. Then I turn right again and walk 60 meters. Which direction am I facing now?

(a) North

(b) North-West

(c) East

(d) North-East

49. Going 50 m to the south of her house Radhika turns left and goes another 20 m. Then turning to the North, she goes 30 m and then starts walking to her house. In which direction is she walking now?

(a) North-West

(b) North

(c) South-East

(d) East

50. A man is facing west. He turns 45^0 in the clockwise direction and then another 180^0 in the same direction and then 270^0 in the anticlockwise direction. Which direction is he facing now?

(a) South

(b) North-West

(c) West

(d) South-West

51. E is the son of A. D is the son of B. E is married to C. C is B's daughter. How is D related to E ?

(a) Brother

(b) Uncle

(c) Brother-in-law

(d) Husband

52. Pointing towards a girl in the photograph, Pooja said. “She is the mother of Janaki whose father is my son.” How is Pooja related to the girl in the photograph?

(a) Mother

(b) Cousin

(c) Aunt

(d) Mother-in-Law

53. Following questions are based on the information given below.

(i) 'P×Q' means 'P is the father of Q'.

(ii) 'P−Q' means 'P is the sister of Q'.

(iii) 'P+Q' means 'P is the mother of Q'.

(iv) 'P÷Q' means 'P is the brother of Q'.

In the expression B+D×M÷N, how M is related to B

(a) Granddaughter

(b) Son

(c) Grandson

(d) Granddaughter or Grandson

54. There are six children playing football namely A, B, C, D, E and F. A and E are brothers. F is the sister of E. C is the only son of A's uncle. B and D are the daughters of the brother of C's father. How is C related to F ?

(a) Cousin

(b) Brother

(c) Son

(d) Uncle

55. Mr. Vimlesh said, “This girl is the wife of the grandson of my mother.” How is the Mr. Vimlesh related to the girl?

(a) Father

(b) Grand Father

(c) Husband

(d) Father–in–Law

56. Six students are sitting in row in an examination hall. K is sitting between V and R. V is sitting next to M. M is sitting next to B. B is sitting extreme left and Q is sitting next to R . Who is sitting adjacent to V?

(a) M and R

(b) M and K

(c) K and R

(d) M and Q

(57-58) Read the following information carefully and answer the questions and answer the questions that follow.

There are 3 females A, B and E and 4 males C, D, F, and G standing in a straight line. No two females are together. B is to right of C, F and D are not together as A is placed between them. G is not near B or E but E and F are together. D is not to the right of B.

57. Who are in the extreme ends?

(a) G and B

(b) C and F

(c) B and D

(d) None of these

58. Who is exactly in the middle?

(a) A

(b) F

(c) E

(d) None of these

Study the following information carefully and answer the given Questions

Seven persons A, B, C, D, E, F and G are sitting in a straight line (not necessarily in the same order) facing North.

I. Only two persons sit between F and G and G sits second to the left of B.

II. D sits third to the left of C

III. E sits exactly between G and B and B sits at the extreme right end of the row.

59. Who amongst the following sits at the extreme left of the line?

(a) F

(b) D

(c) C

(d) E

60. Who amongst the following sits exactly middle of the line?

(a) A

(b) C

(c) E

(d) G

Part B: Statistics

61. Histogram is used for finding:

(a) Mode

(b) Mean

(c) First Quartile

(d) None

62. Data are said to be _____ if the investigator himself is responsible for the collection of data.

(a) Primary Data

(b) Secondary Data

(c) Mixed of Primary and Secondary Data

(d) None of these

63. The frequency of the Class 20-30 in the following data is;

Class	0-10	10-20	20-30	30-40	40-50
Cumulative Frequency	5	13	28	34	38

(a) 5

(b) 28

(c) 15

(d) 13

64. There were 200 employees in an office in which 150 were married. Total male employees were 160 out of which 120 were married. What was the female unmarried employees?

(a) 30

(b) 10

(c) 40

(d) 50

65. The quartile deviation from the following observations is 10,18,20,28,15,17,22,25,29,32,34 is equal to:

(a) 8

(b) 6

(c) 10

(d) 5

66. SD of first five consecutive natural numbers is:

(a) $\sqrt{10}$

(b) $\sqrt{8}$

(c) $\sqrt{3}$

(d) $\sqrt{2}$

67. If the profit of a company remains same for the last 10 months then the SD of profit of the company would be:

(a) Positive

(b) Negative

(c) Zero

(d) either (a) or (c)

68. A batsman in his 20th innings makes a score of 120 and thereby increases his average by 5. What is his average after 20th innings?

(a) 60

(b) 55

(c) 65

(d) 70

69. The sum of squares of the deviations of the given values from their ..... is minimum.

(a) Arithmetic Mean

(b) Median

(c) Mode

(d) None of these

70. 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

71. The mean of first three terms is 14 and mean of next two terms is 18. The mean of all five terms is

(a) 14.5

(b) 15

(c) 14

(d) 15.6

72. The Standard deviation of a variable x is to be 10. The Standard deviation of 50+5x is

(a) 50

(b) 100

(c) 10

(d) 500

73. The Quartile deviation is

(a) 2/3 of SD

(b) 4/5 of SD

(c) 5/6 of SD

(d) None of these

74. 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

75. Geometric Mean of 8,4, 2 is

(a) 4

(b) 2

(c) 8

(d) none of these

76. If P(A) = $\frac{1}{2}$; P(B) = $\frac{1}{3}$ and $P(A \cap B) = \frac{1}{4}$ then the value of $P(\overline{A} U \overline{B})$ is:

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

(b) $\frac{3}{4}$

(c) $\frac{2}{5}$

(d) None of these

77. From the following probability distribution table, find E(x).

x:	1	2	3
f(x):	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{6}$

(a) 1

(b) 1.50

(c) 1.67

(d) None of these

78. A husband and a wife appear in an interview for two vacancies in the same post. The probability of husband's selection is 3/5 and that of wife's selection is 1/5. Then the probability that only one of them is selected is:

(a) 16/25

(b) 17/25

(c) 14/25

(d) None of these

79. A bag contains 5Red and 4 Black balls. A ball is drawn at random from the bag and put into another bag contains 3 red and 7 black balls. A ball is drawn randomly from the second bag. What is the probability that it is red?

(a) 32/99

(b) 1/3

(c) 74/99

(d) None of these

80. If x be a poison variates with parameter 1; then find P(3<X<5). (Given e^{-1}= 0.36783)

(a) 0.015326

(b) 0.15326

(c) 0.012326

(d) None of these

81. The probability that a student is not a swimmer is $\frac{1}{5}$, then the probability that out of five students four are swimmers is:

(a) $\left(\frac{4}{5}\right)^4\left(\frac{1}{5}\right)$

(b) ${}^5C_1\left(\frac{1}{5}\right)^4\left(\frac{4}{5}\right)$

(c) ${}^5C_4\left(\frac{4}{5}\right)^4\left(\frac{1}{5}\right)$

(d) None of these

82. In a Binomial distribution n = 9 and P = 1/3. What is the value of Variance.

(a) 8

(b) 4

(c) 2

(d) 16

83. The variance of standard normal distribution is

(a) 1

(b) 0

(c) σ^2

(d) 0

84. In a Poisson Distribution P(x=0) =P(x=2). Find E(x)

(a) $\sqrt{2}$

(b) 2

(c) -1

(d) 0

85. Name of the distribution which has Mean= Variance

(a) Binomial

(b) Poisson

(c) Normal

(d) (a) and (b)

86. If the difference between mean and mode is 33, then the difference between Mean and Median will be _____

(a) 63

(b) 31.5

(c) 11

(d) None of the above

87. Relative frequency for a particular class lies between:

(a) 0 and 1

(b) 0 and 1, both inclusive

(c) -1 and 0

(d) -1 and 1

88. Less than type and more than type Ogives meet at a point known as:

(a) Mean

(b) Median

(c) Mode

(d) None

89. If mean and coefficient of variation of the marks of n students is 20 and 80 respectively. What will be variance of them

(a) 256

(b) 16

(c) 25

(d) None of these

90. A non-leap year, the probability of getting 53 Sundays or 53 Tuesdays or 53 Thursdays is

(a) 4/7

(b) 2/7

(c) 3/7

(d) 1/7

91. In a bivariate distribution if the rank correlation coefficient r = 0.12; ΣD^2 =146; Then the no. of observed pairs (N) is

(a) 9

(b) 8

(c) 7

(d) 10.

92. For 10 pairs of observations, number of concurrent deviations was found to be 4. What is the value of the coefficient of concurrent deviation?

(a) $\sqrt{0.2}$

(b) 1/3

(c) -1/3

(d) $-\sqrt{0.2}$

93. Consider the two regression lines 3x + 2y = 26 & 6x + y = 31, Find the mean values of x and y.

(a) $\bar{x} = 4$ and $\bar{y} = 7$

(b) $\bar{x} = 7$ and $\bar{y} = 4$

(c) $\bar{x} = 5$ and $\bar{y} = 6$

(d) None of these

94. For a m×n two way or bivariate frequency table, the maximum number of marginal distributions is coefficient

(a) 1

(b) 2

(c) m+n

(d) mn

95. 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 of these

96. The number of tests of Adequacy is

(a) 2

(b) 3

(c) 4

(d) 5

97. Fishers Ideal formula for calculating Index number satisfies the

(a) Unit Test

(b) Factor Reversal Test

(c) Time reversal Test

(d) both (b) and (d)

98. 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

99. The simple index number for the current year using simple aggressive method for the following data

Commodity base	Base year Price (P_0)	Current Year Price (P_1)
Wheat	80	100
Rice	100	150
Gram	120	250
Pulses	200	300

(a) 200

(b) 150

(c) 240

(d) 160

100. The cost-of-living index number in year 2015 and 2018 were 97.5 and 115 respectively. The salary of CA Jitendra in 2015 was 195000. How much additional salary was required for him in 2018 to maintain the same standard of living as in 2015?

(a) 30,000

(b) 40,000

(c) 35,000

(d) 45,000

MOCK TEST PAPER 1

FOUNDATION COURSE

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours **Marks: 100**

Part A: Business Mathematics and Logical Reasoning

1. $\left(\frac{\sqrt{3}}{9}\right)^{5/2}\left(\frac{9}{3\sqrt{3}}\right)^{7/2} \times 9$ is equal to

   (a) 1

   (b) $\sqrt{3}$

   (c) $3\sqrt{3}$

   (d) $\frac{3}{9\sqrt{3}}$

2. If $\frac{p}{q}=\frac{2}{3}$ then the value of $\frac{2p+q}{2p-q}$ is

   (a) $\frac{1}{7}$

   (b) $-\frac{1}{7}$

   (c) 1

   (d) 7

3. $\log_a \sqrt{3}=\frac{1}{6}$, find the value of a

   (a) 9

   (b) 81

   (c) 27

   (d) 3

4. $\log\frac{p^2}{qr}+\log\frac{q^2}{pr}+\log\frac{r^2}{pq}=$

   (a) pqr

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

   (c) 1

   (d) 0

5. Find the value of $\frac{3t^{-1}}{t^{-\frac{1}{3}}}$

   (a) $\frac{3}{t^{\frac{2}{3}}}$

   (b) $\frac{3}{t^{\frac{3}{2}}}$

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

   (d) $\frac{3}{t^{2}}$

6. A bag conatind 25 paise, 10 paise and 5 paise are in the ratio 3:2:1. The total value of ₹ 40, the number of 5 paise coins is

   (a) 45

   (b) 48

   (c) 40

   (d) 20

7. If one root is $5z^2+13z+y = 0$ be receiprocal of the other then the value of y is

   (a) $\frac{1}{5}$

   (b) $-\frac{1}{5}$

   (c) 5

   (d) -5

8. If $2^x \times 3^y \times 5^z = 720$ then the value of x, y, z ?

   (a) 4, 2, 1

   (b) 1, 2, 4

   (c) 2, 4, 1

   (d) 1, 4, 2

9. A man wants to cut three lengths from a single piece of boaard of length 91 cm. The Second length is to be 3 cm longer than the shortest and third length is to be twice as the shortest. What is the possible length for the shortest piece?

   (a) 22

   (b) 20

   (c) 15

   (d) 18

10. A labour can be paid under two methods of given below :

    (i) ₹ 600 fixed and ₹ 50 per hour

    (ii) ₹ 170 per hour

    If a labour job work takes 'r' hours to complete, findout the value of r for which the method (ii) gives the labour gets the better wages.

    (a) x= 6

    (b) x= 4

    (c) x=3

    (d) x=2

11. The time required to produce a unit of product A is 3 hours and that for product B is 5 hours. The total available time is 220 hours. If x and y are the number of units of A and B that are produced then

    (a) 3x+2y =220

    (b) 3x+5y≥220, x≥0, y≥0

    (c) 3x+5y≤220, x≥0, y≥0

    (d) 5x+2y≥220, x≥0, y≥0

12. What must be added to each term of the ratio 49:68. So that it becomes 3:4 ?

    (a) 3

    (b) 5

    (c) 8

    (d) 9

13. Find future value of annuity of ₹ 1000 made annualy for seven yeras at interest rate 16% compounded annaualy. [Given that $(1.16)^7$= 2.8262]

    (a) ₹ 11413.75

    (b) ₹ 11000.35

    (c) ₹ 8756

    (d) ₹ 9892.34

14. Assuming that the discount rate is 7% is p.a. How much would you pay to receive ₹ 500. Growing at 5% annually forever?

    (a) ₹ 2,500

    (b) ₹ 5,000

    (c) ₹ 7,500

    (d) ₹ 25,000

15. Rajesh deposits ₹ 3,000 at the start of each quarter in his savings account. If the accaount earns interest 5.75% per annuam compounded quarterly, how much money (in ₹) while he have at the end of 4 years? [Given that $(1.014375)^{16}$ = 1.25654]

    (a) ₹ 54,308.6

    (b) ₹ 58,553.6

    (c) ₹ 68,353.6

(d) ₹ 63,624.4

16. The annual rate of simple interest is 12.5%. In how many years does principal doubles?
    (a) 11 years
    (b) 9 years
    (c) 8 years
    (d) 7 years
17. ₹ 5000 is paid every year for 10 years to pay off a loan. What is the loan amount of interest rate be 14% p.a compounded annualy?
    (a) ₹ 26,000.90
    (b) ₹ 26080.55
    (c) ₹ 15000.21
    (d) ₹ 16,345.11
18. ₹ 800 is invested at the end of each month in account paying interest 6% per year compounded monthly. What is the future value of annuity after 10^{th} payment ? [Given that $(1.005)^{10} = 1.0511$]
    (a) ₹ 4444
    (b) ₹ 8766
    (c) ₹ 3491
    (d) ₹ 8176
19. Certain sum of money borrowed at simple interest to ₹ 2688 in three years and to ₹ 2784 in four years at the rate per annum equal to
    (a) 4%
    (b) 6%
    (c) 5%
    (d) 7%
20. Ravi made of an investment of ₹ 15,000 in a scheme and at the time of maturity the time of maturity the amount was ₹ 25,000. If Compound Annual Growth Rate (CAGR) for this investment is 8.88%. Calculate the approximate number of years for which he has invested the amount.
    (a) 6
    (b) 7.7
    (c) 5.5
    (d) 7
21. Madhu takes a loan of ₹ 50,000 from ABC Bank LTD.The rate of interest is 10% per annum. The first instalmennt will be paid at the end of five year. Determine the amount (in ₹) of equal instalments, if Madhu wishes to repay the amount in five years.
    (a) ₹ 19,510
    (b) ₹ 19,430
    (c) ₹ 19,310
    (d) ₹ 16,630

22. Rajesh invests ₹ 20,000 per year in a stock index fund, with earns 9% per year, for the next ten years.What would be closest value of accumulated investment upon payment of the last installment? [Given: $(1.09)^{10} = 2.36736$]

    (a) ₹ 3,88,764.968

    (b) ₹ 3,03,858.564

    (c) ₹ 2,68,728.484

    (d) ₹ 4,08,718.364

23. An investment is earning compounded interest ₹ 100 invested in the year 2 accumulated to ₹ 105 by year 4. If ₹ 500 invested in the year 5, will become ₹ _____by year 10.

    (a) ₹ 364.80

    (b) ₹ 564.80

    (c) ₹ 464.80

    (d) ₹ 664.80

24. An investor is saving to pay off an obligation of ₹ 15,250 which will due in seven years, if the investor is earning 7.5% simple interest rate per annum, he must deposit ₹ _____ to meet the obligation.

    (a) ₹ 8,000

    (b) ₹ 9,000

    (c) ₹ 10,000

    (d) ₹ 11,000

25. The value of scooter is ₹ 1,00,000 find its depreciation is 10% p.a. Calculte total depreciation value at the end of seven years.

    (a) ₹ 47829.70

    (b) ₹ 47000.90

    (c) ₹ 42709

    (d) ₹ 42,000

26. Effective rate of interest does not depend upon

    (a) Amount of Principal

    (b) Amount of Interest

    (c) Number of conversion periods

    (d) none of these

27. The number of traingles that can be formed by choosing the vertices from a set of 12 ponts, Seven of which lie on the same lie on the same straight line is:

    (a) 185

    (b) 175

    (c) 115

    (d) 105

28. Five bulbs of which three are defective are to be tired in two light-points in a dark-room. In how many trails the room shall be lightened ?

    (a) 10

(b) 7

(c) 3

(d) none of these

29. In how many ways can a party of 4 men and 4 women be seated at a circular table, so that no two women are adjacent ?

(a) 164

(b) 174

(c) 144

(d) 154

30. How many words can be formed with the letters of the word 'ORIENTAL'. So that A and E always oocupy odd places:

(a) 540

(b) 8460

(c) 8640

(d) 8450

31. The number of ways of painting the faces of a cube by 6 different colours is

(a) 30

(b) 36

(c) 24

(d) 1

32. The sum of an AP, whose first is -4 and last term is 146 is 7171. Find the value of n

(a) 99

(b) 100

(c) 101

(d) 102

33. In a geometric progression , the second term is 12 and sixth term is 192. Find 11^{th} term.

(a) 3,072

(b) 1,536

(c) 12,288

(d) 6,144

34. The first and last terms of an arithmetic progression are 5 and 905. Sum of the terms is 45,955. The number of terms is

(a) 99

(b) 100

(c) 101

(d) 102

35. The sum of first eight terms of geometric progression is five times the sum of the first four terms. The common ratio is

(a) $\sqrt{3}$

(b) $\sqrt{2}$

(c) 4

(d) 2

36. If the sum of n terms of an AP is $(3n^2-n)$ and its common difference is 6, then its term is

(a) 3

(b) 2

(c) 4

(d) 1

37. Two finite sets have m and n elements .The total number of sub sets of first set is 56 more than the total number of subsets of the second set. The value of m and n are

(a) 6,3

(b) 7,6

(c) 5,1

(d) 8,7

38. If $f(p) = \frac{1}{1-p}$, then f^{-1} is

(a) 1-p

(b) $\frac{p-1}{p}$

(c) $\frac{p}{p-1}$

(d) $\frac{1}{p}$

39. Determine f(x) , given that $f'(x) = 12x^2-4x$ and $f(-3) = 17$

(a) $f(x) = 4x^3-2x^2+143$

(b) $f(x) = 6x^3-x^4+137$

(c) $f(x) = 3x^4-x^3-137$

(d) $f(x) = 4x^3-2x^2-143$

40. $\int_0^1 x.e^x dx$

(a) -1

(b) 1

(c) e^1

(d) 1/e

Logical Reasoning

41. Find the missing term in each of the following series : 6, 13, 25, 51, 101?
    (a) 201
    (b) 202
    (c) 203
    (d) 205
42. Find the missing term in each of the following series : 28, 33,31,36, 34,?
    (a) 48
    (b) 39
    (c) 54
    (d) 62
43. In a certain code, TEACHER is written as VGCEJGT, How is CHILDREN written in that code?
    (a) EJKNEGTP
    (b) EGKNEITP
    (c) EJKNFGTO
    (d) EJKNFTGP
44. In a certain code language, '253' means 'books are old'; '546' means 'man is old' and '378' means 'buy good books'. What stands for 'are' in that code?
    (a) 2
    (b) 4
    (c) 5
    (d) 6
45. If SUMMER is coded as RUNNER, the code for WINTER will be
    (a) SUITER
    (b) VIOUER
    (c) WALKER
    (d) SUFFER
46. From home Neha goes towards North for her college and then she turns left and then turns right, and finally she turns left and reaches college. In which direction her college is situated with respect to her home ?
    (a) South-West
    (b) North-East
    (c) North-West
    (d) South-East
47. Y is in the East of X which is in the North of Z. If P is in the South of Z, then in which direction of Y, is P?
    (a) North
    (b) South

(c) Soth-East

(d) South-West

48. Five villages P, Q, R, S, and T are situated close to each other. P is to the west of Q, R is to the south of P. T is to the north of Q and S is to the east of T. Then, R is in which direction with respect to S?

(a) North-West

(b) South-East

(c) South-West

(d) Data inadequate

49. If South-West becomes North, then what will North-East be?

(a) North

(b) South-East

(c) South

(d) East

50. In a clock at 12 : 30, hour needle is in North direction while minute needle is in South direction. In which direction would be minute needle at 12:45?

(a) North-West

(b) South-East

(c) West

(d) East

51. Five students are standing in a circle. Abhinav is between Alok and Ankur. Apurva is on the left of Abhishek. Alok is on the left of Apurva. Who is sitting next to Abhinav on his right?

(a) Apurva

(b) Ankur

(c) Abhishek

(d) Alok

Directions(Questions 52-54) Study the following information carefully and answer the questions given below.

Six friends A, B, C, D, E and F are sitting in a row facing towards North. C is sitting between A and E. D is not at the end. B is sitting at immediate right of E. F is not at the right end but D is sitting at 3rd left of E.

52. How many persons are there to the right of D?

(a) One

(b) Two

(c) Three

(d) Four

53. Which of the following is sitting to the left of D?

(a) F

(b) C

(c) E

(d) A

54. Who is at the immediate left of C?

(a) A

(b) E

(c) Either E or A

(d) Cannot be determined

55. Five persons are sitting on a bench to be photo graphed, S is to the left of N and to the right of B. M is to the right of N. R is between N amd M. Who is sitting immediate right to R.

(a) B

(b) N

(c) M

(d) S

56. B is the brother of A whose only sister is mother of C, D is maternal grandmother of C How is A related to D?

(a) Aunt

(b) Daughter-in-law

(c) Daughter

(d) Nephew

57. If X+Y maens X is the mother of Y; X-Y means X is the brother of Y; X%Y means X is the father of Y and X×Y means X is the sister of Y, Which of the following shows that A is the materanal uncle of B?

(a) B+D×C-A

(b) B-D%A

(c) A-C+D×B

(d) A+C×D-B

Directions(Questions 58-60) Read the following information and answer the questions given below.

Anita is the niece of Prateek's mother. Anita's mother is Prateek's aunt. Rohan is Anita's mother's brother. Rohan's mother is Anita's grandmother. From this information. deduce the relationship between.

58. Rohan's mother is _____to Anita's mother.

(a) Aunt

(b) Mother

(c) No relation

(d) Sister

59. Prateek's and Anita's mother are _____

(a) Cousin sister

(b) Sister-in-law

(c) Friends

(d) Sisters

60. Rohan is Prateek's _____

(a) Brother

(b) Brother-in-law

(c) Uncle

(d) Cousin brothers

Part B: Statistics

61. The distribution of profits of a company follows:

(a) J-shaped frequency curve

(b) U-shaped frequency curve

(c) Bell-shaped frequency curve

(d) Any of these

62. Median of a distribution can be obtained from:

(a) Historgarm

(b) Frequency Polygon

(c) Less than type ogives

(d) none of these

63. Frequency density corresponding to a class interval is the ratio of

(a) Class Frequency to the Total Frequency

(b) Class Frequency to the class Length

(c) Class frequency to the class Frequency

(d) Class Frequency to the Cumulative Frequency.

64. Cost of sugar in a month under the heads raw Materials, labour, direct production and others were 12, 20, 35 and 23 units respectively. What is the difference between the central angles for the largest and smallest components of the cost of sugar?

(a) 72^o

(b) 48^o

(c) 56^o

(d) 92^o

65. In a group of persons, average weight is 60 kg. If the average of males and females taken separately is 80 kg and 50 kg respectively, find the ratio of the number of males to that of females.

(a) 2:3

(b) 3:2

(c) 2:1

(d) 1:2

66. A train covered the first 5 km of its journey at a speed of 30km/hr and next 15 km at a speed of 45 km/hr. The average speed of the train was :

(a) 38 km/hr

(b) 40 km/hr

(c) 36 km/hr

(d) 42 km/hr

67. If 2x + 3y + 4 = 0 and v(x) = 6 then v (y) is:

(a) 8/3

(b) 9

(c) -9

(d) 6

68. If the standard deviation of 1, 2, 3, 4, ... 10 is σ, then the standard deviation of 11, 12, 13, 14, ..., 20 is:

(a) 10σ

(b) $10+\sigma$

(c) σ

(d) None of these

69. What is the standard deviation of the following series :

Measurements	0-10	10-20	20-30	30-40
Frequency :	1	3	4	2

(a) 81

(b) 7.6

(c) 9

(d) 2.26

70. If the difference between Mean and Mode is 69, then the difference between Mean and Median will be _____:

(a) 63

(b) 31.5

(c) 23

(d) None of these

71. If all observations in a distribution are increased by 6, then the variance of the series will be _____

(a) Increased

(b) Decreased

(c) Unchanged

(d) None of these.

72. Which measure of dispersion is base on the absolute deviation only?

(a) Range

(b) Standard Deviation

(c) Mean Devaition

(d) Quartile Devation

73. Calculaue the value of 3rd quartile from the following data 40, 35, 51, 21, 25, 16, 29, 27, 32

    (a) 36.25

    (b) 30.25

    (c) 25

    (d) 35

74. The mean of 100 students was 45 . Later on, it was discovered that the marks of two students were misread as 85 and 54 instead of 58 and 45. Find correct mean.

    (a) 68

    (b) 36

    (c) 44.64

    (d) 52

75. The arithmetic maen and coefficienct of variation of data set x are respectively, 10 and 30. The variance of 30-2x is

    (a) 28

    (b) 32

    (c) 34

    (d) 36

76. The approximate ratio of SD, MD, QD is

    (a) 2:3:4

    (b) 3:4:5

    (c) 15:12:10

    (d) 5:6:7

77. The geometric mean of three numbers 40, 50 and x is 10, the value of x is

    (a) 5

    (b) 4

    (c) 2

    (d) ½

78. Diffrence between upper limit and lower limit of classs is known as

    (a) Range

    (b) Class Mark

    (c) Class Size

    (d) Class Boundary

79. Let P be a probability function on S = $\{X_1, X_2, X_3\}$ if $P(X_1)=1/4$ and $P(X_3) = 1/3$ then $P(X_2)$ is equal to:

    (a) 5/12

    (b) 7/12

    (c) 3/4

    (d) none of these

80. A speaks truth in 60% of the cases and B in 90% of the cases. In what percentage of cases are they likely to contradict each other in stating the same fact:

(a) 36%

(b) 42%

(c) 54%

(d) none of these.

81. A candidate is selected for interview for 3 posts. For the first there are 3 candidates, for the second there are 4 and for the third there are 2. What are the chances of his getting at least one post?

(a) 3/4

(b) 2/3

(c) 1/10

(d) 1

82. A card is drawn from a pack of playing cards and then another card is drawn without the first being replaced. What is the probability of getting two kings:

(a) 7/52

(b) 1/221

(c) 3/221

(d) none of these.

83. The probability of a man hitting the target is 1/4. If he fires 7 times, the probability of hitting the target at least twice is :

(a) $1-\left(\frac{5}{2}\right)\left(\frac{3}{4}\right)^6$

(b) $1-\frac{15}{2}\left(\frac{3}{4}\right)^6$

(c) $1-\frac{5}{6},3^5$

(d) $1-\left(\frac{3}{4}\right)^6$

84. If 5% of the electric bulbs manufactured by a company are defective, use Poisson distribution to find the probability that in a sample of 100 bulbs, 5 bulbs will be defective. [Given : $e^{-5} = 0.007$]

(a) 0.1823

(b) 0.1723

(c) 0.1623

(d) 0.1923

85. In a non- leap year, the probability of getting 53 Sundays or 53 Tuesdays or 53 Thursdays is:

(a) $\frac{4}{7}$

(b) $\frac{2}{7}$

(c) $\frac{3}{7}$

(d) $\frac{1}{7}$

86. Examine the validity of the following : Mean and standard deviation of a binomial distribution are 10 and 4 respective:

(a) Not valid

(b) Valid

(c) Both [a] and [b]

(d) Neither [a] nor [b]

87. For a Poisson variate X, P(x=1) =P(x=2), what is the mean of x ?

(a) 1

(b) 3/2

(c) 2

(d) 5/2

88. Thity balls are serially numbered and placed in bag. Find chance that the first ball drawn is a multiple of 3 or 5

(a) 8/15

(b) 2/15

(c) 1/2

(d) 7/15

89. For a normal distribution, the first and third quartile are given to be 37 and 49, the mode of the distribution is.

(a) 37

(b) 49

(c) 43

(d) 45

90. The odds in favour of event A in a trail is 3:1. In a three independent trails, the proabibility of non occurrence of the event A is

(a) 1/64

(b) 1/32

(c) 1/27

(d) 1/8

91. If 4y - 5x = 15 is the regression line of y on x and the coefficient of correlation between x and y is 0.75, what is the value of the regression coefficient of x on y ?

(a) 0.45

(b) 0.9375

(c) 0.6

(d) none of these

92. If the regression line of y on x and of x on y are given by 2x+ 3y = -1 and 5x + 6y = -1 then the arithmetic means of x and y are given by.

(a) (1,-1)

(b) (-1,1)

(c) (-1, -1)

(d) (2,3)

93. If correlation co-efficient r between x and y is 0.5 then r between x and –y is

(a) 1

(b) 0.5

(c) -0.5

(d) 0

94. For a positive and perfectly correlated random varaiables , one of the regression coefficeint is 1.4 and the standard devation of X is 2, the variance of Y is

(a) 2.37

(b) 6.76

(c) 6.56

(d) 3.16

95. For n pairs of of observations , the coefficient of concurrent devation is calculated as $\frac{1}{\sqrt{3}}$. If there are six concurrent deviations, n=

(a) 11

(b) 10

(c) 9

(d) 8

96. Consumer Price Index Number goes up from 100 to 200 and salary of a worker is also raised from 300 to 500, then Real Wage is

(a) 300

(b) 250

(c) 600

(d) 350

97. The Circular Test is known as:

(a) $P_{01} \times P_{12} \times P_{20} = 1$

(b) $P_{12} \times P_{01} \times P_{20} = 1$

(c) $P_{20} \times P_{12} \times P_{01} = 1$

(d) $P_{02} \times P_{21} \times P_{12} = 1$

98. In the data group Bowley's and Laspyre's index number is as follows. Bowley's index number =150, Laspyre's index number = 180 then Paasche's index number is

(a) 120

(b) 30

(c) 165

(d) None of these

99. Laspyres índex number is aweighted aggregate method by taking _____ as weights.

(a) Quanatity consumed in the base year

(b) Quanatity consumed in the current year

(c) Value of items consumed in base year

(d) Vlaue of items consumed in the current year

100. Find the Paasche's Index number for prices from the following

Commodity	Base year		Current year	
	Price	Commodity	Price	Commodity
A	5	25	6	30
B	3	8	4	10
C	2	10	3	8
D	10	4	3	45

(a) 151.21

(b) 165.28

(c) 157.26

(d) 160.21

MOCK TEST PAPER 2

FOUNDATION COURSE

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Time: 2 Hours **Marks: 100**

Part A: Business Mathematics and Logical Reasoning

1. The ratio of two numbers are 3 : 4. The difference of their squares is 28 .Greater number is:
   (a) 8
   (b) 12
   (c) 24
   (d) 64
2. The price of scooter and moped are in the ratio 7 : 9. The price of moped is ₹ 1600 more than that of scooter. Then the price of moped is:
   (a) ₹ 7200
   (b) ₹ 5600
   (c) ₹ 800
   (d) ₹ 700
3. $\log_{0.01} 10{,}000 = ?$
   (a) 2
   (b) – 2
   (c) 4
   (d) – 4
4. Value of $\left[9^{n+\frac{1}{4}} . \frac{\sqrt{3.3^n}}{3.\sqrt{3^{-n}}}\right]^{\frac{1}{n}}$
   (a) 9
   (b) 27
   (c) 81
   (d) 3
5. Roots of the equation $x^3+9x^2 – x – 9 = 0$.
   (a) 1, 2, 3
   (b) 1, - 1, - 9
   (c) 2, 3, - 9
   (d) 1, 3, 9
6. $\frac{2x+5}{10}+\frac{3x+10}{15}=5$, then value of x
   (a) 10.58
   (b) 9.58

(c) 9.5

(d) None of these

7. Find value of $x^2 - 10x + 1$, if $x = \frac{1}{5-2\sqrt{6}}$

(a) 25

(b) 1

(c) 0

(d) 49

8. Find the value of k in $3x^2 - 2kx + 5 = 0$, if x = 2.

(a) 17/4

(b) -7/14

(c) 4/17

(d) -4/17

9. $6x + y \geq 18$, $x + 4y \geq 12$, $2x + y \geq 10$, On solving the inequalities; we get:

(a) (0, 18), (12, 0), (4, 2) & (7, 6)

(b) (3, 0), (0, 3), (4, 2) & (7, 6)

(c) (5, 0), (0, 10), (4, 2) & (7, 6)

(d) (0, 18), (12, 0), (4, 2), (0, 0) & (7, 6)

10. A man invests ₹ 12,000 at 10% p.a. and another sum of money at 20% p.a for one year. The total investment earns at 14% p.a. simple interest the total investment is:

(a) ₹ 8,000

(b) ₹ 20,000

(c) ₹ 14,000

(d) ₹ 16,000

11. The difference in simple interest of a sum invested of ₹ 1,500 for 3 years is ₹ 18. The difference in their rates is:

(a) 0.4

(b) 0.6

(c) 0.8

(d) 0.10

12. Find the effective rate of interest on ₹ 10,000 on which interest is payable half yearly at 5% p.a.

(a) 5.06%

(b) 4%

(c) 0.4%

(d) 3%

13. Find the effective rate of interest at 10% p.a. when interest is payable quarterly.

(a) 10.38%

(b) 5%

(c) 5.04%

(d) 4%

14. What will be the population after 3 years when present population is 25,000 and population increases at the rate of 3% in 1st year, at 4% in 2nd year and at 5% in 3rd year?

    (a) 28,119

    (b) 29,118

    (c) 27,000

    (d) 30,000

15. The value of scooter is ₹ 10,000. Find its value after 7 years if rate of depreciation is 10% p.a.

    (a) ₹ 4,782.96

    (b) ₹ 4,278.69

    (c) ₹ 42,079

    (d) ₹ 42,000

16. SI = 0.125 P at 10% p.a. Find Time.

    (a) 1.25 years

    (b) 25 years

    (c) 0.25 years

    (d) None of these

17. How much amount is required to be invested every year as to accumulate ₹ 6,00,000 at the end of 10 years, if interest is compounded annually at 10% rate of interest [Given : $(1{:}1)^{10}$ = 2.59374].

    (a) ₹ 37,467

    (b) ₹ 37,476

    (c) ₹ 37,647

    (d) ₹ 37,674

18. The difference between the CI and SI for 2 year is 21. If the rate of interest is 5%, the final principal is:

    (a) ₹ 8,200

    (b) ₹ 4,800

    (c) ₹ 8,000

    (d) ₹ 8,400

19. Present value of a scooter is ₹ 7,290. If its value decreases every year by 10%, then its value before 3 years is equal to:

    (a) 10,000

    (b) 10,500

    (c) 20,000

    (d) 20,500

20. Mr. X lent some amount of money at 4% S.I. and he obtained ₹ 520 less than he lent in 5 years. The sum lent is

    (a) ₹ 620

    (b) ₹ 650

    (c) ₹ 750

(d) None of these

21. ₹ 8,829 is invested into three different sectors in such a way that their amounts at 4% p.a. S.I. after 5 years; 6 and 8 years are equal. Find each part of the sum.

(a) ₹ 3,069, ₹ 2,970; ₹ 2,790

(b) ₹ 3,089, ₹ 2,970; ₹ 2,790

(c) ₹ 3,609, ₹ 2,970; ₹ 2,790

(d) ₹ 3,069, ₹ 2,960; ₹ 2,760

22. A ₹1000 bond paying annual dividends at 8.5% will be redeemed at par at the end of 10 years. Find the purchase price of this bond if the investor wishes a yield rate of 8%

(a) ₹ 907.135

(b) ₹ 1033.54

(c) ₹ 945.67

(d) None of these

23. Mr. X invest ₹ 10,000 every year starting from today for next: 10 years suppose interest rate is 8% per annual compounded annually. Calculate future value of the annuity.

(a) ₹ 1,56,454.88

(b) ₹ 1,56,554.88

(c) ₹ 1,44,865.625

(d) None of these

24. Three girls and five boys are to be seated in a row so that no two girls sit together. Total No. of arrangements are:

(a) 14,400

(b) 120

(c) 5P3

(d) $3! \times 5!$

25. How many numbers can be formed with the help of 2, 3, 4, 5, 6, 1 which is not divisible by 5, given that it is a five digit number and digits are not repeating?

(a) 1200

(b) 400

(c) 600

(d) 1400

26. How many different groups of 3 people can be formed from a group of 5 people?

(a) 5

(b) 6

(c) 10

(d) 9

27. In how many ways can 4 people be selected at random from 6 boys and 4 girls if there are exactly two girls?

(a) 90

(b) 360

(c) 92

(d) 480

28. ${}^{n}P_3 : {}^{n}P_2 = 2 : 1$

(a) 4

(b) 7/2

(c) 5

(d) 2/7

29. Sum lying from 100 to 300 which is divisible by 4 and 5 is

(a) 2000

(b) 2100

(c) 2200

(d) 2300

30. Sum of x terms of two AP's are in the ratio $(3x + 5) : (5x + 3)$ then ratio of their 10^{th} term is

(a) 31 : 49

(b) 30 : 49

(c) 28 : 49

(d) None of these

31. Out of total 150 students, 45 passed in Accounts, 30 in Economics and 50 in Maths, 30 in both Accounts and Maths, 32 in both Maths and Economics, 35 in both Accounts and Economics, 25 students passed in all the three subjects. Find the numbers who passed at least in any one of the subjects :

(a) 63

(b) 53

(c) 73

(d) None of these

32. Let A = {1,2, 3}, then the relation R = {(1,1), (2, 3), (2, 2), (3, 3), (1,2)} is:

(a) Symmetric

(b) Transitive

(c) Reflexive

(d) Equivalence

33. Let A be the set of squares of natural numbers and let $x \in A$, $y \in A$ then

(a) $X + Y \in A$

(b) $X-Y \in A$

(c) $\frac{X}{Y} \in A$

(d) $xy \in A$

34. If 5^{th} term of G.P. is 32 and 3^{rd} term of G.P. is 8 then 6^{th} term of G.P. is

(a) 4

(b) 16

(c) 32

(d) 6

35. Which term of The sequence 2, 4, 8, 16 ……. is 2048 ?

(a) 9

(b) 10

(c) 11

(d) None of these

36. The number of proper sub set of the set {3, 4, 5, 6, 7} is

(a) 32

(b) 31

(c) 30

(d) 25

37. $\int_0^1 \left(e^x + e^{-x}\right) dx$ is

(a) $e - e^{-1}$

(b) $e^{-1} - e$

(c) $e + e^{-1}$

(d) None of these

38. If $f(x) = x^k$ and $f'(1) = 10$, then the value of k is :

(a) 10

(b) -10

(c) 1/10

(d) None of these

39. If $y = ae^{nx} + be^{-nx}$, then $\frac{d^2y}{dx^2}$ is equal to _____ .

(a) n^2y

(b) $-n^2y$

(c) ny

(d) None of these

40. $\int 2^{3x}.3^{2x}.5^x.dx$ = _____

(a) $\frac{2^{3x}.3^{2x}.5^x}{\log(720)} + c$

(b) $\frac{2^{3x}.3^{2x}.5^x}{\log(360)} + c$

(c) $\frac{2^{3x}.3^{2x}.5^x}{\log(180)} + c$

(d) $\frac{2^{3x}.3^{2x}.5^x}{\log(90)} + c$

Logical Reasoning

41. Find the missing term of the following series : 3, 15, ?, 63,99, 143

    (a) 27

    (b) 35

    (c) 45

    (d) 56

42. Find the missing term of the following series : 7,26, 63, 124,215,342,?

    (a) 391

    (b) 421

    (c) 481

    (d) 511

43. Find the missing term of the following series :3,7, 15, ?, 63, 127

    (a) 30

    (b) 31

    (c) 47

    (d) 52

44. Find odd man out of the following series 3,4, 10, 32, 136, 685,4116

    (a) 10

    (b) 32

    (c) 136

    (d) 4116

45. In a certain code language, '253' means 'books are old'; '546' means 'man is old' and '378' means 'buy good books'. What stands for 'are' in that code?

    (a) 2

    (b) 4

    (c) 5

    (d) 6

46. Neha walked 2 km west of her house and then turned south covering 4 km. Finally, she moved 3 km towards east and then again 1 km west. How far is she from her initial position?

    (a) 7 km

    (b) 3 km

    (c) 4 km

    (d) 12 km

47. Shweta moved a distance of 75 metres towards the north. She then turned to the left and walking for about 25 metres, turned left again and walked 80 metres. Finally, she turned to the right at an angle of 45°. In which direction was she moving finally?

    (a) South

    (b) South-West

(c) North-East

(d) North-West

48. Varun faces towards north. Turning to his right, he walks 25 metres. He then turns to his left and walks 30 metres. Next, he moves 25 metres to his right. He then turns to his right again and walks 55 metres. Finally he turns to the right and moves 40 metres. In which direction is he now from his starting point ?

(a) South-East

(b) South-West

(c) South

(d) North-West

49. Pankaj is facing west. He turns 45° in the clockwise direction and then again another turns with 180° in the same direction i.e. clockwise direction, after that he turns 270° in the anticlockwise direction. Which direction is he facing now ?

(a) North-West

(b) West

(c) South-West

(d) South

50. A man is facing north. He turns 45 degree in the clockwise direction and then another 180 degree in the same direction and then 45 degree in the anticlockwise direction. Find which direction he is facing now?

(a) North

(b) East

(c) West

(d) South

51. A, P, R, X, S and Z are sitting in a row. S and Z are in the centre. A and P are at the ends. R is sitting to the left of A. Who is to the right of P?

(a) A

(b) X

(c) S

(d) Z

52. A, B, C, D and E are sitting on a bench. A is sitting next to B, C is sitting next to D, D is not sitting with E who is on the left end of the bench. C is on the second position from the right. A is to the right of B and E. A and C are sitting together. In which position A is sitting?

(a) Between B and D

(b) Between B and C

(c) Between E and D

(d) Between C and E

53. There are four children P, Q, R, S sitting in a row. P occupies seat next to Q but not next to R. If R is not sitting next to S? Who is occupying seat next to adjacent to S.

(a) Q

(b) P

(c) P and Q

(d) None of these

54. Six persons A,B,C,D,E and F are standing in a circle.B is between D and C.A is between E and C.F is to the right of D.Who is between A and F?

(a) B

(b) C

(c) D

(d) E

55. Five persons are standing in a line. One of the two persons at the extreme ends is a professor and the other a businessman. An advocate is standing to the right of a student. An author is to the left of the businessman. The student is standing between the professor and the advocate. Counting from the left, the advocate is at which place ?

(a) 1st

(b) 2nd

(c) 3rd

(d) 5th

56. P is Q's daughter, Q is R's mother, S is R's brother. How is S related to P?

(a) Father

(b) Grandfather

(c) Brother

(d) Son

57. If X is brother of son of Y's son, then how is X related to Y ?

(a) Brother

(b) Cousin

(c) Grandson

(d) Son

58. If P is the husband of Q and R is the mother of S and Q. What is R to P?

(a) Mother

(b) Sister

(c) Aunt

(d) Mother-in-law

59. B is the brother of A. Whose only sister is mother of C. D is maternal grandmother of C. How is A related to D?

(a) Aunt

(b) Daughter-in-law

(c) Daughter

(d) Nephew

60. X and Y are the children of A. A is the father of X but Y is not his son. How is Y related to A?
    (a) Son
    (b) Daughter
    (c) Sister
    (d) Brother

Part B: Statistics

61. The number of times a particular items occurs in a class interval is called its:
    (a) Mean
    (b) Cumulative Frequency
    (c) Frequency
    (d) None of the above
62. An Ogive is a graphical representation of:
    (a) Cumulative Frequency distribution
    (b) Ungrouped Data
    (c) A frequency distribution
    (d) None of the above
63. From the following data, cumulative frequency for the class 20 – 30 is

Class	Frequency
0 – 10	4
10 – 20	6
20 – 30	20
30 – 40	8
40 – 50	3

    (a) 26
    (b) 10
    (c) 41
    (d) 30
64. Histogram can be shown as:
    (a) Ellipse
    (b) Rectangle
    (c) Hyperbola
    (d) Circle
65. _____ series is continuous.
    (a) Open ended
    (b) Exclusive
    (c) Close ended
    (d) Unequal Class Intervals

66. Ogive graph is used for finding:
    (a) Quartiles
    (b) Deciles
    (c) Median
    (d) All of these
67. Histogram is useful to determine graphically the value of:
    (a) Arithmetic Mean
    (b) Mode
    (c) Median
    (d) None of these
68. Data are said to be _____ if the investigator himself is responsible for the collection of data.
    (a) Primary Data
    (b) Secondary Data
    (c) Mixed of Primary and Secondary Data
    (d) None of these
69. A suitable graph for representing the portioning of total into sub parts in statistics is:
    (a) A Pictograph
    (b) A Pie Chart
    (c) An Ogive
    (d) A Histogram
70. The AM of 15 observations is 9 and the AM of first 9 observations is 11 and then AM of remaining observations is:
    (a) 11
    (b) 6
    (c) 5
    (d) 9
71. In a moderately skewed distribution the values of mean and median are 12 and 8 respectively. The value of mode is:
    (a) 0
    (b) 12
    (c) 15
    (d) 30
72. Which of the following is positional average?
    (a) Median
    (b) GM
    (c) HM
    (d) AM

73. For a symmetric distribution:
    (a) Mean = Median = Mode
    (b) Mode = 3 Median – 2 Mean
    (c) Mode = 1/3 Median = 1/2 Mean
    (d) None
74. For the distribution

x	f
1	6
2	9
3	10
4	14
5	12
6	8

    The value of median is:
    (a) 3.5
    (b) 3
    (c) 4
    (d) 5
75. The QD of six numbers 15, 8, 36, 40, 38, 41 is equal to:
    (a) 12.5
    (b) 25
    (c) 13.5
    (d) 37
76. SD of first five consecutive natural numbers is:
    (a) $\sqrt{10}$
    (b) $\sqrt{8}$
    (c) $\sqrt{3}$
    (d) $\sqrt{2}$
77. If the profit of a company remain same for the last 10 months then the SD of profit of the company would be:
    (a) Positive
    (b) Negative
    (c) Zero
    (d) either (a) or (c)
78. Coefficient of Quartile Deviation is 1/4 then Q_3/Q_1 =?
    (a) 5/3
    (b) 4/3

(c) 3/4

(d) 3/5

79. The sum of mean and SD of a series is a + b, if we add 2 to each observation of the series then the sum of mean and SD is :

(a) a + b + 2

(b) 6 – a + b

(c) 4 + a – b

(d) a + b + 4

80. What is the mean of X having the following density function? $\boldsymbol{f(x) = \frac{1}{\sqrt[4]{2\pi}} e^{\frac{(x-10)^2}{32}}}$ for - ∞ < x < ∞

(a) 4

(b) 10

(c) 40

(d) None of these

81. If mean and variance are 5 and 3 respectively then relation between p and q is :

(a) p > q

(b) p < q

(c) p = q

(d) p is symmetric

82. In a Poisson distribution if P(x=4) = P(x= 5) then the parameter of Poisson distribution is:

(a) $\frac{4}{5}$

(b) $\frac{5}{4}$

(c) 4

(d) 5

83. Area between -1.96 to +1.96 in a normal distribution is :

(a) 95.45%

(b) 95%

(c) 96%

(d) 99%

84. Two events A and B are such that they do not occur simultaneously then they are called _____ events.

(a) Mutually exhaustive

(b) Mutually Exclusive

(c) Mutually Independent

(d) Equally Likely

85. If a coin is tossed 5 times then the probability of getting Tail and Head occurs alternatively is:

(a) $\frac{1}{8}$

(b) $\frac{1}{16}$

(c) $\frac{1}{32}$

(d) $\frac{1}{64}$

86. When 2 dice are thrown simultaneously then the probability of getting at least one 5 is:

(a) $\frac{11}{36}$

(b) $\frac{5}{36}$

(c) $\frac{8}{15}$

(d) $\frac{1}{7}$

87. The probability that a leap year has 53 Wednesday is:

(a) $\frac{2}{7}$

(b) $\frac{3}{5}$

(c) $\frac{1}{7}$

(d) $\frac{2}{3}$

88. Ram is known to hit a target in 2 out of 3 shots whereas Shyam is known to hit the same target in 5 out of 11 shots. What is the probability that the target would be hit if they both try?

(a) $\frac{9}{11}$

(b) $\frac{6}{11}$

(c) $\frac{10}{33}$

(d) $\frac{3}{11}$

89. The probability that a student is not a swimmer is $\frac{1}{5}$, then the probability that out of five students four are swimmers is:

(a) $\left(\frac{4}{5}\right)^4 \left(\frac{1}{5}\right)$

(b) ${}^5C_1\left(\frac{1}{5}\right)^4 \left(\frac{4}{5}\right)$

(c) ${}^5C_4\left(\frac{4}{5}\right)^4 \left(\frac{1}{5}\right)$

(d) None of these

90. If the two lines of regression are x + 2y – 5 = 0 and 2x + 3y – 8 = 0, then the regression line of y on x is:

(a) x + 2y – 5 = 0

(b) x + 2y = 0

(c) 2x + 3y – 8 = 0

(d) 2x + 3y = 0

91. 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
92. AM of regression coefficient is:
    (a) Equal to r
    (b) Greater than or equal to r
    (c) half of r
    (d) None of these
93. 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 of these
94. Which is not satisfied by Fisher's Ideal Index Number?
    (a) Factor Reversal Test
    (b) Time Reversal Test
    (c) Circular Test
    (d) None of the above
95. The prices and quantities of 3 commodities in base and current years are as follows:

P_0	P_1	Q_0	Q_1
12	14	10	20
10	8	20	30
8	10	30	10

    The Laspyre's Price Index Number is:
    (a) 118.13
    (b) 107.14
    (c) 120.10
    (d) None of these
96. The cost of living index number in year 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 same standard of living as in 2015?
    (a) 3000
    (b) 4000
    (c) 3500

(d) 4500

97. The number of test adequacy is

(a) 2

(b) 5

(c) 3

(d) 4

98. Laspyers method and Paasches method do not satisfy

(a) Unit Test

(b) Time Reversal Test

(c) Factor Reversal Test

(d) b and c

99. The coviraiance between two variables is

(a) Strictly positive

(b) Strictly negative

(c) Always zero

(d) Either positive or negative or zero

100. When two lines of regression become identical when

(a) r = 1

(b) r = -1

(c) r = 0

(d) (a) or (b)