

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

- The ratio of two numbers are 3 : 4. The difference of their squares is 28 .Greater number is:
 - 8
 - 12
 - 24
 - 64
- 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:
 - ₹ 7200
 - ₹ 5600
 - ₹ 800
 - ₹ 700
- $\log_{0.01} 10,000 = ?$
 - 2
 - 2
 - 4
 - 4
- Value of $\left[9^{n+\frac{1}{4}} \cdot \frac{\sqrt{3 \cdot 3^n}}{3 \cdot \sqrt{3^{-n}}} \right]^{\frac{1}{n}}$
 - 9
 - 27
 - 81
 - 3
- Roots of the equation $x^3+9x^2 - x - 9 = 0$.
 - 1, 2, 3
 - 1, - 1, - 9
 - 2, 3, - 9
 - 1, 3, 9
- $\frac{2x+5}{10} + \frac{3x+10}{15} = 5$, then value of x
 - 10.58
 - 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 10th 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 5th term of G.P. is 32 and 3rd term of G.P. is 8 then 6th 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. $\int_0^1 (e^x + e^{-x}) dx$ 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. $\int 2^{3x} \cdot 3^{2x} \cdot 5^x \cdot dx =$ _____
(a) $\frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(720)} + c$
(b) $\frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(360)} + c$
(c) $\frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(180)} + c$
(d) $\frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(90)} + c$

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) $\frac{3}{4}$
 (d) $\frac{3}{5}$
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? $f(x) = \frac{1}{\sqrt{2\pi}} e^{-\frac{(x-10)^2}{32}}$ for $-\infty < x < \infty$
- (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:
- 0.5
 - 0.5
 - 0.75
 - 0.80
92. AM of regression coefficient is:
- Equal to r
 - Greater than or equal to r
 - half of r
 - 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 $\frac{\sigma_y^2}{\sigma_x^2} = \underline{\hspace{2cm}}$.
- 3
 - 2
 - 4
 - None of these
94. Which is not satisfied by Fisher's Ideal Index Number?
- Factor Reversal Test
 - Time Reversal Test
 - Circular Test
 - 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:

- 118.13
 - 107.14
 - 120.10
 - 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?
- 3000
 - 4000
 - 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)