

CA-FOUNDATION

MOCK EXAM PAPER – NOVEMBER 2018

PAPER 3: BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS

Duration: 2 hours

Maximum Marks: 100

PART A: BUSINESS MATHEMATICS

QUESTIONS

- The ratio of the prices of two houses was 16:23. Two years later when the price of the first has increased by 10% and that of the second by ₹ 477, the ratio of the prices becomes 11:20. Find the original prices of the two houses.
 - 850, 1219
 - 848, 1250
 - 848, 1219
 - 850, 1250
- Show that $(x^{\frac{b+c}{c-a}})^{\frac{1}{a-b}} \cdot (x^{\frac{c+a}{a-b}})^{\frac{1}{b-c}} \cdot (x^{\frac{a+b}{b-c}})^{\frac{1}{c-a}}$ reduces to
 - 1
 - 3
 - 1
 - None of the above
- Two numbers are in the ratio 3:4. If 6 be added to each terms of the ratio, then the new ratio will be 4:5, then the numbers are
 - 14,20
 - 17,19
 - 18,24
 - None of the above
- $\frac{1}{1 + \log_a(bc)} + \frac{1}{1 + \log_b ca} + \frac{1}{1 + \log_c ab}$ is equal to
 - 0
 - 1
 - 3
 - 1
- A number consisting of two digits is four times the sum of its digits and if 27 is added to it the digits are reversed. The number is
 - 63
 - 35
 - 36
 - 60

6. The hypotenuse of a right-angled triangle is 20 cm. The difference between its other two sides be 4 cm. The sides are
- (11cm, 15 cm)
 - (12 cm, 16 cm)
 - (20 cm, 24 cm)
 - None of the above
7. If α, β are the roots of equation $x^2 - 5x + 6$ and $\alpha > \beta$ then the equation with $(\alpha\beta + \alpha + \beta)$ and $(\alpha\beta - \alpha - \beta)$ is
- $x^2 - 12x + 11 = 0$
 - $2x^2 - 6x + 12 = 0$
 - $x^2 - 12x + 12 = 0$
 - None of the above
8. Transpose of a row matrix is
- Zero Matrix
 - Diagonal Matrix
 - Column Matrix
 - Row Matrix
9. An employer recruits experienced (x) and fresh workmen (y) for his firm under the condition that he cannot employ more than 9 people. x and y can be related by the inequality
- $x + y \neq 9$
 - $x + y \leq 9 \quad x \geq 0, y \geq 0$
 - $x + y \geq 9 \quad x \geq 0, y \geq 0$
 - None of the above
10. On solving the inequalities $6x + y \geq 18, x + 4y \geq 12, 2x + y \geq 10$, we get the following situation
- (0,18), (12,0), (4,2) and (2,6)
 - (3,0), (0,3), (4,2) and (7,6)
 - (5,0), (0,10), (4,2) and (7,6)
 - (0,18), (12,0), (4,2), (0,0) and (7,6)
11. Rohan deposited ₹ 1,50,000 in his bank for 3 years at simple interest rate of 8%. How much interest would he earn? How much would be the final value of deposit?
- (₹ 36,000, ₹ 176000)
 - (₹ 30,000, ₹ 186000)
 - (₹ 36,000, ₹ 186,000)
 - None of the above
12. What sum of money will produce ₹ 33000 as an interest in 5 years and 6 months at 5% per annum simple interest?
- ₹ 150,000
 - ₹ 112,000

- c) ₹ 102,000
- d) ₹ 120,000

13. Compute the compound interest on ₹ 5000 for $2\frac{1}{2}$ years at 15% per annum compounded half yearly

- a) ₹ 2179
- b) ₹ 2178
- c) ₹ 1278
- d) ₹ 2177

14. ₹ 16,000 invested at 10% p.a compounded semi-annually amounts to ₹ 18,522. Find the time period of investment.

- a) 6 years
- b) 4 years
- c) 3 years
- d) 1.5 years

15. ₹ 7000 is invested in a Term Deposit Scheme that fetches interest 8% per annum compounded quarterly. What is the effective rate of interest?

- a) 8%
- b) 8.1%
- c) 8.3%
- d) 8.2%

16. If the conversion period is three months, the number of conversion period in a year

- a) 365
- b) 12
- c) 4
- d) 2

17. You invest ₹ 10,000 in a three-year investment that pays you 15% per annum. Calculate the future value of the investment.

- a) ₹ 15000
- b) ₹ 15208.
- c) ₹ 15300
- d) ₹ 15308

18. The number of ways in which the letters of the word 'DOGMATIC' can be arranged is

- a) 40,319
- b) 40,320
- c) 40,321
- d) None of the above

19. In how many ways of the word "MATHEMATICS" be arranged so that the vowels occur together
- $11! \div (2!)^3$
 - $(8! \times 4!) \div (2!)^3$
 - $12! \div (2!)^3$
 - None of the above
20. In how many ways can 3 books on Mathematics and 5 books on English be placed so that books on the same subject always remain together
- 1440
 - 240
 - 480
 - 144
21. A committee is to be formed of 2 teachers and 3 students out of 10 teachers and 20 students. If a particular teacher is included the number of ways in which this can be done is
- $10C_2 \times 20C_3$
 - $9C_1 \times 20C_3$
 - $10C_2 \times 19C_3$
 - None of the above
22. Out of 6 members belonging to party 'A' and 4 belonging to party 'B' in how many ways a committee of 5 can be selected so that the members of party 'A' are in a majority?
- 180
 - 186
 - 185
 - 184
23. The three numbers in A.P whose sum is 18 and product is 192 are
- 4,6,8
 - 4, -6, -8
 - 8,6,4
 - Both (a) and (c)
24. Insert 4 arithmetic means between 4 and 324.
- 68,132,196,260
 - 68,122,196,260
 - 68,132,186, 250
 - 68,132,196,250
25. A person saved ₹ 16,500 in ten years. In each year after the first year he saved ₹ 100 more than he did in the preceding year. The amount of money he saved in the 1st year is

- a) ₹ 1000
- b) ₹ 1500
- c) ₹ 1200
- d) None of these

26. E is a set of positive even number and O is a set of positive odd numbers then $E \cup O$ is a

- a) Set of whole numbers
- b) \mathbb{N}
- c) Set of rational number
- d) None of the above

27. If $A \Delta B = (A - B) \cup (B - A)$ and $A = \{1, 2, 3, 4\}$, $B = \{3, 5, 7\}$ then $A \Delta B$ is

- a) $\{1, 2, 4, 5, 7\}$
- b) $\{3\}$
- c) $\{1, 2, 3, 4, 5, 7\}$
- d) None of the above

28. If P has three elements Q four and R two how many elements does the Cartesian product set $P \times Q \times R$ will

- a) 24
- b) 9
- c) 29
- d) None of the above

29. ₹ 550 invested at the end of each month in an account paying interest 8% per year compounded monthly. What is the future value of the annuity after 10th payment? Given that $(1.007)^{10} = 1.0722$

- a) ₹ 5672.85
- b) ₹ 5572.85
- c) ₹ 5472.85
- d) ₹ 5372.85

30. Mr. Roy invests ₹ 14000 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 $(1.08)^{10} = 2.15892500$

- a) ₹ 219055
- b) ₹ 219037
- c) ₹ 220000
- d) ₹ 229037

31. An annuity left unpaid for a certain number of years is called

- a) Forborne Annuity
- b) Deferred Annuity
- c) Contingent Annuity
- d) Perpetual Annuity

32. Ms. Srinidhi borrows ₹ 6,00,000 to buy a flat. If she pays equal instalments for 20 years and 10% interest on outstanding balance what will be the equal instalment?

- a) ₹ 60,475
- b) ₹ 65,475
- c) ₹ 70,475
- d) ₹ 75,475

33. The gradient of the curve $y = 2x^3 - 3x^2 - 12x + 8$ at $x = 0$ is

- a) -12
- b) 12
- c) 0
- d) None of the above

34. If $x = 3t^2 - 1$, $y = t^3 - t$ then $\frac{dy}{dx}$ is equal to

- a) $\frac{3t^2-1}{6t}$
- b) $3t - 1$
- c) $6t$
- d) None of these

35. $\int \log x \, dx$ is equal to

- a) $x \log x + k$
- b) $x \log x - x^2 + k$
- c) $\log x + k$
- d) None of the above

36. $f(x) = \frac{x^2}{e^x}$ then $f'(1)$ is equal to

- a) $-1/e$
- b) $1/e$
- c) e
- d) None of the above

37. If $y = ae^{2x} + bxe^{2x}$ where a and b are constants the value of the expression

$$\frac{d^2y}{dx^2} - 4 \frac{dy}{dx} + 4y$$

- a) 0
- b) 1
- c) -1
- d) None of the above

38. Assuming that the discount rate is 8% per annum, how much would you pay to receive ₹ 80, growing at 5% annually, forever?
- ₹ 2166.67
 - ₹ 2266.67
 - ₹ 2666.67
 - ₹ 2766.67
39. Fixed coupon payments on permanently invested sums of money are prime example of
- Forborne annuity
 - Perpetual annuity
 - Contingent annuity
 - Deferred annuity
40. Out of a total population of 50,000 only 28,000 read telegraph and 23,000 read Times of India while 4,000 read the both. How many do not read any paper?
- 3,000
 - 2,000
 - 4,000
 - None of the above

PART B: LOGICAL REASONING

QUESTIONS

41. If BROTHER is coded 2456784, SISTER is coded as 919684, what is coded for BORBERS?
- 2542849
 - 2542898
 - 2454889
 - 2524889
42. If ROSE is written as TQUG, how BISCUIT can be written in that code?
- CJTDVJU
 - DKUEWKV
 - DKVEWKV
 - DKUEWKY
43. In a certain code '256' means 'you are good', '637' means 'we are bad' and '358' means 'good and bad'. Which of the following represents 'and' in that code?
- 2
 - 5
 - 8
 - 3

44. Find the odd number: 16, 25, 36, 73, 144, 196, 225
- a) 36
 - b) 73
 - c) 196
 - d) 225
45. If X stands on his head with his face towards south, to which direction will his left-hand point?
- a) East
 - b) West
 - c) North
 - d) South
46. I started walking down a road in the morning facing the sun. After walking for some time, I turned to my left. Then I turned to my right. In which direction was I going then?
- a) East
 - b) West
 - c) North
 - d) South
47. Roopa starts from a point and walks 15 metre towards west, turns left and walks 12 metre, turns right again and walks. What is the direction she is now facing?
- a) South
 - b) West
 - c) East
 - d) North
48. Five boys A, B, C, D and E are sitting in a row. A is to the right of B and E is to the left of B but to the right of C. A is to the left of D. Who is second from the left end?
- a) D
 - b) A
 - c) E
 - d) B
49. There are five different houses, A to E in a row. A is to the right of B and E is to the left of C and right of A, B is to the right of D. Which of the houses is in the middle?
- a) A
 - b) B
 - c) C
 - d) D

50. Five friends P, Q, R, S and T are sitting in a row facing North. Here S is between T and Q and Q is to the immediate left of R. P is to the immediate left of T. Who is in the middle?
- S
 - T
 - Q
 - R
51. Five boys are standing in a row facing East. Pavan is left of Tavan, Vipin and Chavan to the left of Nakul. Chavan is between Tavan and Vipin. Vipin is fourth from the left, then how far is Tavan to the right?
- First
 - Second
 - Third
 - Fourth
52. Six Persons M, N, O, P, Q and R are sitting in two rows with three persons in each row. Both the row are in front of each other. Q is not at the end of any row. P is second the left of R. O is the neighbour of Q and diagonally opposite of P. N is the neighbour of R. Who is in front N?
- R
 - Q
 - P
 - M
53. Six Persons A, B, C, D, E and F are sitting in two row, three in each row.
- E is not at the end of any row
 - D is second to the left of F
 - C, the neighbour of E, is sitting diagonally opposite
 - B is the neighbour of F
- Which of the following are in one of the two rows?
- D, B and F
 - C, E and B
 - A, E and F
 - F, B
54. A is D' brother. D is B's father. B and C are sisters. How is A related to C?
- Son
 - Grandson
 - Father
 - Uncle

55. A is father of C and D is son of B. E is brother of A. If C is sister of D how is B related to E?
- Sister-in-law
 - Sister
 - Brother
 - Brother-in-law
56. X and Y are brothers. R is the father of Y. S is the brother of T and maternal uncle of X. What is T to R?
- Mother
 - Wife
 - Sister
 - Brother
57. Vinod introduces Vishal as the son of the only brother of his father's wife. How is Vinod related as Vishal?
- Cousin
 - Brother
 - Son
 - Uncle
58. Introducing a man, a woman said, "His wife is the only daughter of my mother." How is the woman related with the man?
- Sister in law
 - Wife
 - Aunt
 - Mother in law
59. I) Some boys are student
II) All students are engineers
Conclusion: I) All Engineers are students
II) Some boys are Engineers
- Only I follows
 - Only II follows
 - Both I and II follow
 - Neither I nor II follows
60. I) All lotus are flowers
II) No lily is a lotus
Conclusion: I) No lily is a flower
II) Some lilies are flowers.
- Only I follows
 - Only II follows
 - Either I and II follow
 - Neither I nor II follows

PART C: STATISTICS

QUESTIONS

61. An attribute is
- A qualitative characteristic
 - A quantitative characteristic
 - A measurable characteristic
 - All of the above
62. In how many different ways an ogive can be prepared
- 2
 - 3
 - 4
 - None of the above
63. The best method to collect data, in case of a natural calamity, is
- Personal Interview
 - Indirect Interview
 - Questionnaire Method
 - Direct Observation Method
64. For tabulation 'caption' is
- The upper part of the table
 - The lower part of the table
 - The main part of the table
 - The upper part of a table that describes the column and sub - column
65. 'Stub' of a table is the
- Left part of the table describing the columns
 - Right part of the table describing the columns
 - Right part of the table describing the rows
 - Left part of the table describing the rows.
66. Difference between the maximum and minimum value of a given data is called
- width
 - range
 - size
 - none
67. Mode of a distribution can be obtained from
- Histogram
 - Less than type ogives
 - More than type ogives
 - Frequency polygon

68. The distribution of profits of a company follows
- J – shaped frequency curve
 - U – shaped frequency curve
 - Bell – shaped frequency curve
 - Any of these
69. Quartiles can be determined graphically using
- Histogram
 - Frequency Polygon
 - Ogive
 - Pie chart
70. An aeroplane flies from A to B at the rate of 500 km/hr and comes back from B to A at the rate of 700 km/hr. The average speed of the aeroplane is
- 600 km/hr
 - 583.33 km/hr
 - 500 km/hr
 - 620 km/hr
71. If G.M of x is 10 and G.M of y is 15, then the GM of xy is
- 150
 - $\log 10 \times \log 15$
 - $\log 150$
 - None of these
72. If the AM and GM for 10 observations are both 15, then the value of HM is
- Less than 15
 - More than 15
 - 15
 - Cannot be determined
73. The mean salary for a group of 40 female workers is ₹ 5200 per month and that for a group of 60 male workers is ₹ 6800 per month. What is the combined mean salary?
- ₹ 6000
 - ₹ 6100
 - ₹ 6160
 - ₹ 6200
74. Measures of a central tendency for a given set of observations measures
- The scatterness of the observations
 - The central location of the observations
 - Both (a) and (b)
 - None of these

75. The most commonly used measure of dispersion is
- Range
 - Standard deviation
 - Coefficient of variation
 - Quartile deviation
76. A shift of origin has no impact on
- Range
 - Standard deviation
 - Mean deviation
 - All the above and quartile deviation
77. If the range of x is 2, what would be the range of $-3x + 50$
- 2
 - 6
 - 6
 - 44
78. The coefficient of mean deviation about mean for the first 9 natural numbers is
- $200/9$
 - 80
 - $400/9$
 - 50
79. If the relation between x and y is $5y - 3x = 10$ and the mean deviation about mean for x is 12, then the mean deviation of y about mean is
- 7.20
 - 6.80
 - 20
 - 18.80
80. Two dice are thrown together. Find the probability of getting a multiple of 2 on one dice and multiple of 3 on the other.
- $1/6$
 - $1/3$
 - $1/2$
 - $5/6$
81. A man can kill a bird once in three shots. The probabilities that a bird is not killed is
- $1/3$
 - $2/3$
 - 1
 - 0

82. When X is a continuous function $f(x)$ is called
- Probability mass function
 - Probability density function
 - Both (a) and (b)
 - None of the above
83. A bag contains 6 whites and 5 black balls. One ball is drawn. The probability that it is white is
- $5/11$
 - 1
 - $6/11$
 - $1/11$
84. What is the probability that 4 children selected at random would have different birthdays?
- 0.9836
 - 0.3499
 - 0.002
 - 0.003
85. Probability of getting a head when two unbiased coins are tossed simultaneously is
- 0.25
 - 0.50
 - 0.20
 - 0.75
86. Number of radioactive atoms decaying in a given interval of time is an example of
- Binomial distribution
 - Normal distribution
 - Poisson distribution
 - None of the above
87. If 15 dates are selected at random, what is the probability of getting two Sundays?
- 0.29
 - 0.39
 - 0.49
 - 0.59
88. Between 2 to 3 PM, the average number of phone calls per minute coming into the switchboard of a company is 4. Find the probability that during one particular minute there will be no phone calls.
- 0.0181
 - 0.0182
 - 0.0183

d) 0.0184

89. The distribution known as “distribution of rare events”

- a) Binomial
- b) Poisson
- c) Normal
- d) None of the above

90. The correlation coefficient being +1 if the slope of the straight line in a scatter diagram is

- a) Positive
- b) Negative
- c) Zero
- d) None of the above

91. The correlation coefficient r is the of the two regression coefficients b_{yx} and b_{xy}

- a) Arithmetic Mean
- b) Geometric Mean
- c) Harmonic Mean
- d) None of the above

92. Maximum value of Rank Correlation Coefficient is

- a) -1
- b) +1
- c) 0
- d) None of the above

93. If the coefficient of correlation between two variables is -0.9, then the coefficient of determination is

- a) 0.9
- b) 0.1
- c) 0.81
- d) 0.19

94. If the rank correlation coefficient between marks in history and geography for a group of students is 0.6 and the sum of squares of the difference in ranks is 66, what is the number of students in the group?

- a) 10
- b) 9
- c) 8
- d) 11

95. The coefficient of concurrent deviation for p pairs of observations was found to be $\frac{1}{\sqrt{3}}$. If the number of concurrent deviations was found to be 6, then the value of p is
- 7
 - 8
 - 9
 - 10
96. Fisher's Ideal Index number is
- The median of laspeyre's and paasche's index numbers
 - The Arithmetic Mean of Laspeyre's and Paasche's index numbers
 - The Geometric Mean of Laspeyre's and Paasche's index numbers
 - None of the above
97. Cost of Living Index (C.L.I) numbers are also used to find real wages by the process of
- Deflating of Index Numbers
 - Splicing of Index numbers
 - Base shifting
 - None of the above
98. Circular test is one of the tests of
- Index Numbers
 - Hypothesis
 - Both (a) and (b)
 - None of the above
99. The trend values in freehand curve method are obtained by
- Equation of Straight line
 - Second degree parabola
 - Graph
 - All of the above
100. Damages due to floods, droughts, strikes, fires and political distribution are
- Trend
 - Seasonal
 - Cyclical
 - Irregular