

M.K.G CA EDUCATION

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TEST – 4

QUESTION BOOKLET CODE: MKG

QUESTION PAPER BOOKLET NO. 4122021

CA FOUNDATION

(02-09-2021 3:30 p.m. to 5:30 p.m)

Business Mathematics and Logical Reasoning & Statistics

CHAPTERS

1. Complete statistics
2. Complete mathematics excluding Calculus

Time allowed: 2 hours

Maximum Marks : 100

Instructions:

1. Answer to be given in OMR sheet
2. Negative marking applies

01. 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) $\frac{1}{x+y+z}$

02. $\log_4 X + \log_{16} X + \log_{64} X + \log_{256} X = \frac{25}{12}$ The value of X is

- a) 64
- b) 4
- c) 16
- d) 2

- 03.** The sum of n terms of an Arithmetic Progression is $2n^2$ the fifth term is
- a) 20
 - b) 50
 - c) 18
 - d) 25
- 04.** The sum of three numbers in GP is 28 When 7, 2 and 1 are subtracted from the terms respectively the resulting numbers are in A.P. What is the sum of square of numbers?
- a) 510
 - b) 456
 - c) 400
 - d) 336
- 05.** The number of ways 5 boys and 5 girls can be made to sit in a round table if no two boys are together
- a) 2550
 - b) 2880
 - c) 625
 - d) 2476
- 06.** In computing correlation by Karl Pearson method, the coefficient of alienation is .8 the value of r is
- a) .6
 - b) .36
 - c) .64
 - d) cannot be determined
- 07.** A sum of money becomes Rs 27,900 in 3 years and Rs 41,850 in 6 years at a certain rate of interest on annual compounding the value of investment is
- a) 16080
 - b) 18,600
 - c) 18060
 - d) 16800

- 08.** If the nominal rate of growth is 17% and inflation rate is 9% the G D P after 6 years will be
- a) 1.587 times
 - b) 1.921 times
 - c) 1.403 times
 - d) 2.510 times
- 09.** The price of share increased to Rs 157.36 from Rs 90 in five years the CAGR is
- a) 11.77%
 - b) 9.68%
 - c) 8.87 %
 - d) none of these
- 10.** The effective rate of interest if nominal rate is 24% compounded monthly
- a) 24%
 - b) 26.82%
 - (c) 25.28%
 - d) 24.24%
- 11.** A certain sum amounts to Rs 15,748 in 3 years at simple interest @ $r\%$ p. a the same sum amounts to Rs 16,510 at 2 % higher $(r + 2)\%$ p.a. on simple interest the rate of interest is
- a) 10%
 - b) 8%
 - c) 12%
 - d) 6%
- 12.** If $y = 9x$ and $x = .01y$ the r is equal to
- a) -0.1
 - b) 0.1
 - c) 0.3
 - d) -0.3

13. The CPI goes up from 120 to 180 when salary goes up from 240 to 540 the real increase in salary is
- a) Rs 180
 - b) Rs 150
 - c) Rs 120
 - d) Rs 240
14. The value of money is decreased by 37% the Dearness allowance should be
- a) 51.22%
 - b) 58.73%
 - c) 54.89%
 - d) None of these
15. If Price Index by Fisher is computed by 178 % and by Dr Bowley it is computed as 157% the Price Index by Pasche will be
- a) 164%
 - b) 168%
 - c) 169%
 - d) data provided is in correct
16. There are -----Test in computing price Index
- a) Three
 - b) Four
 - c) Five
 - d) none of these
17. If X and Y are related to $3x + 5y - 7 = 0$ and QD_Y is computed as 9 the variance of $(2x-7)$ is
- a) 2025
 - b) 2525
 - c) 1550
 - d) None of these

18. A biased coin is tossed such that probability of getting head is thrice the probability of getting tail . Find probability of all heads if coin is tossed 4 times

- a) $81/128$
- b) $81/256$
- c) $18/81$
- d) $2/5$

19. In a symmetrical Binomial Distribution with 324 trials the C/V is

- a) 8.65%
- b) 5.56%
- c) 4.95%
- d) none of these

20. Find probability of getting all Sundays if 5 dates are selected In any calendar year

- a) $\frac{1}{16807}$
- b) $\frac{1}{49}$
- c) $\frac{1}{2401}$
- d) None of these

21. If $a = \frac{4\sqrt{18}}{\sqrt{6}+\sqrt{3}}$ the value of $\frac{a+2\sqrt{6}}{a-2\sqrt{6}} + \frac{a+2\sqrt{3}}{a-2\sqrt{3}}$

- a) 2
- b) 3
- c) 4
- d) 5

22. Find sum up to infinity of $1 + \frac{5}{6} + \frac{9}{36} + \frac{13}{216} + \dots$

- a) $\frac{44}{25}$
- b) $\frac{34}{25}$
- c) $\frac{54}{25}$
- d) None of these

23. If the word CORPORATION is written in different ways find Probability vowels occupy odd places

a) $\frac{7}{71}$

b) $\frac{1}{77}$

c) $\frac{1}{71}$

d) None of these

24. A bag contains 6 Red and 5 Blue balls, getting Red ball will win Rs 25 while getting Blue ball will lose Rs 15 find expected value if 3 balls are drawn.

a) -20.45

b) 20.45

c) 24.65

d) None of these

25. 3 Cards are drawn from a pack of cards find Probability all are of same suit

a) $\frac{2}{425}$

b) $\frac{8}{425}$

c) $\frac{4}{425}$

d) None of these

26. In a Binomial Distribution if difference in mean and Variance of 5 trials is 1.8 The distribution is

a) Symmetrical

b) positively skewed

c) negatively skewed

d) None of these

27. If 8 balls are put into 3 boxes find Probability exactly 3 balls shall be put in box number 1

a) $\frac{1792}{6561}$

b) $\frac{1824}{6561}$

c) $\frac{948}{6561}$

d) none of these

28. A bag contains 50 balls number 1 to 50 A wins if divisible of 10 is drawn and B wins if divisible of 8 is drawn on a randomly drawn of a ball, Find Probability of winning A provided B has lost

a) $\frac{1}{10}$

b) $\frac{1}{11}$

c) $\frac{2}{11}$

d) None of these

29. Three dice are thrown find probability of getting a triplet or a total of 15

a) $\frac{15}{216}$

b) $\frac{16}{216}$

c) $\frac{10}{216}$

d) None of these

30. In a manufacturing unit 2% items produced are defective find probability of getting at least 1 defective out of 250 items purchased

a) .9744

b) .9932

c) .9924

d) None of these

31. In which of the distribution both mean and variance are equal

a) Binomial Distribution

b) Poisson' s Distribution

c) Normal Distribution

d) None of these

32. Which is not Bi Modal distribution

- a) Binomial Distribution
- b) Poisson Distribution
- c) Normal Distribution
- d) none of these

33. In a Normal Distribution ($\mu \pm 3\sigma$) covers

- a) .9974
- b) .6826
- c) .9544
- d) none of these

34. In a normally distributed unit if point of inflexions are 40,000 and 24,000 the Quartile Deviation will be

- a) 5333
- b) 6400
- c) 6000
- d) None of these

35. If 4-digit number is formed with 3 4 7 9 and 8 Find probability the number will be greater than 4700

- a) $\frac{3}{4}$
- b) $\frac{1}{4}$
- c) $\frac{1}{2}$
- d) None of these

36. If value of money is decreased by 12% and Dearness allowance is also increased by 12% the workers are

- a) fully compensated
- b) partially compensated
- c) not at all compensated
- d) none of these

37. There is ----- relation between scatteredness of diagram and degree of co relation
- Inverse
 - Direct
 - no relation
 - None f these
38. While computing co efficient of co relation by Rank differential method of 10 observations the difference in 2 ranks is wrongly taken as 6 instead of 5 if computed r_k is .65 the correct co efficient of co relation is
- .72
 - .29
 - .38
 - None of these
39. The 2 Regression lines are $4X - 7Y + 9 = 0$ and $5x - 3y - 8 = 0$ the value of co efficient of alienation is
- .66
 - .81
 - .34
 - none of these
40. From the following data
- | | A | B |
|------------|----------|----------|
| Mean | 300 | 400 |
| Variance | 441 | 225 |
| Alienation | .60 | |
- The sum of regression coefficients are
- 1.44
 - 1.69
 - can not be more than 1
 - None of these
41. If the variance of $(3x + 4)$ is 81 and relation in x and y are $4x + 3Y + 8 = 0$ the variance of $(2y - 9)$ is
- 16
 - 64

- c) 32
- d) None of these

42. In a manufacturing unit the wages is increased in the ratio of 5:7 and number of workers are reduced in the ration of 6:5 the ratio of old and new wage bill is

- a) 6:7
- b) 7:6
- c) 9:8
- d) None of these

43. A traders mixes two qualities of rice Costing Rs 90/kg and Rs 60/Kg to sell the product at 70 /kg and earns Rs 5/kg. What ratio it should be mixed

- a) 1:5
- b) 5:1
- c) 3:2
- d) None of these

44. in an examination average marks score by students is 78% if girls scored 83% and boys scored 71% the percentage of girls in an examination is

- a) 43.62%
- b) 41.67%
- c) 58.33%
- d) None of these

45. If A and B stand in a queue with 6 more persons find probability 3 persons are between A and B

- a) $\frac{2}{3}$
- b) $\frac{1}{7}$
- c) $\frac{1}{9}$
- d) None of these

46. In a normally distributed factory with 12000 employees 3000 draw more than 50,000 while 3,000 draw less than 20,000 the range of salary is
- a) 88950
 - b) 78800
 - c) 67780
 - d) None of these
47. A pair of dice is thrown 7 times find probability of getting at least a total of 9 5 times
- a) 2.34%
 - b) 1.76%
 - c) 3.20%
 - d) none of these
48. Find probability of getting doublet in a single throw of pair of dice provided at least 10 appears
- a) $\frac{2}{5}$
 - b) $\frac{1}{3}$
 - c) $\frac{4}{6}$
 - d) None of these
49. If the word COMMERCE is written in different ways find Probability word start with either C or M
- a) $\frac{1}{2}$
 - b) $\frac{1}{3}$
 - c) $\frac{1}{4}$
 - d) None of these
50. odds in favour of A winning the game is 4:7 and odds against loosing the game for B is 3:7 find odds against one of them will win
- a) 94 : 110
 - b) 49 : 61

- c) 61 : 49
- d) none of these

51. If A B C are exhaustive events and all events are mutually exclusive and equally likely find Probability of B

- a) $\frac{1}{3}$
- b) $\frac{2}{3}$
- c) $\frac{3}{15}$
- d) None of these

52. While computing co efficient of co relation of 11 items by Rank differential method the difference in two ranks is wrongly taken as 7 instead of 9 if computed co efficient of co relation is .56 find correct co efficient of co relation

- a) .43
- b) .34
- c) .70
- d) None of these

53. $\log 144$ is equal to

- a) $2 \log 4 + 2\log 2$
- b) $4\log 2 + 2\log 3$
- c) $3\log 2 + 4\log 3$
- d) None of these

54. If $(a)^{1/3} + (b)^{1/3} + (c)^{1/3} = 0$ then value of $\left(\frac{a+b+c}{3}\right)^3$ is equal to

- a) abc
- b) 9abc
- c) 1/abc
- d) none f these

55. $15(2p^2 - q^2) = 7pq$ while p and q are positive find ratio of $p:q$
- 5:6
 - 5:7
 - 3:5
 - 8:3
56. If α and β are the roots of equation $x^2 + x + r = 0$ $\alpha^3 + \beta^3 = -6$ the value of r is
- 5/3
 - 7/3
 - 4/3
 - none of these
57. If α and β are the roots of equation $x^2 - bx + c = 0$ find equation whose roots are $(\alpha\beta + \alpha + \beta)$ and $(\alpha\beta - \alpha - \beta)$
- $x^2 - 2cx + (c^2 - b^2) = 0$
 - $x^2 - 2bx + (c^2 + b^2) = 0$
 - $8cx^2 - 2(b + c)x + c^2 = 0$
 - $x^2 + 2bx - (c^2 - b^2) = 0$
58. A person on tour has Rs 9600 for his expenses. If his tour is extended by 16 days he has to cut down daily expenses by Rs 20 his original duration of tour was
- 48 days
 - 64 days
 - 80 days
 - none of these
59. If 2 variables x and y are related to $2x + 3y - 7 = 0$ and Mean and mean deviation of x is 1 and .30 find coefficient of Mean Deviation of y
- 5
 - 4
 - 12
 - 50

60. If standard deviation of “n” natural number is 2 the value of n is
- a) 10
 - b) 7
 - c) 6
 - d) 5
61. Nationality of a person is
- a) discrete variable
 - b) continuous variable
 - c) attributes
 - d) none of these
62. Data on national income can be represented by
- a) graphic method
 - b) pie diagram
 - c) Bar diagram
 - d) none of these
63. A man travels at a speed of 20km/hr and returns back at a speed of 30 km/hr ,the average speed is
- a) 25 km/hr
 - b) 24.50 km/ hr
 - c) 24km/hr
 - d) none of these
64. Best measures of dispersion is
- a) RD
 - b) SD
 - c) QD
 - d) MD

65. Mean and SD of x variables are 50 and 5 find Mean and SD of $x-50$ divided by 5 is
- a) 1,0
 - b) 0,1
 - c) 1,1
 - d) none of these
66. If 10 is added to all the observations the C/V becomes 12% and if 10 is subtracted from all the observations the C/V becomes 24% the present C/V of series is
- a) 16%
 - b) 18%
 - c) 36%
 - d) none of these
67. The sum of squares of deviations from actual mean of 10 observations is 250 and mean of the data is 10, The co-efficient of variation is
- a) 10%
 - b) 25%
 - c) 50%
 - d) none of these
68. The mean weight of 15 students is 110 kgs, The mean weight of 5 of them is 100 kgs and another 5 students is 125 kgs then mean of remaining 5 students is
- a) 120 kgs
 - b) 105 kgs
 - c) 115 kgs
 - d) none of these
69. The median of 10 numbers in ascending order 11, 13, 15, 19, $(x + 2)$, $(x + 4)$, 30, 36, 39 and 50 is computed as 25 the value of X is
- a) 22
 - b) 20
 - c) 15

d) 30

70. The mean salary of 50 persons is computed as Rs 5850 and later it was found that the salary of one employee has been wrongly taken as Rs 8,000 instead of Rs 7800, the correct mean salary is

a) Rs 5854

b) Rs 5846

c) Rs 5650

d) none of the above

71. If mean is computed as 5 and median is computed as 5 but QD is computed as 1.50 while SD is computed as 2.60 what should be the value of coefficient of QD

a) 35

b) 39

c) 60

d) 32

72. The HM of 2 numbers is computed as 4 and $2A + G^2 = 27$ where A is AM and G is GM the two numbers are

a) 1, 3

b) 9, 5

c) 6, 3

d) 12, 7

73. The GM of three numbers 40, 50 and X is 10 the value of X is

a) 5

b) 4

c) 2

d) 1/2

74. While computing coefficient of correlation by rank differential method of 10 students the difference in two ranks is wrongly taken as 3 instead of 7 if the computed correlation coefficient is .50 the correct coefficient of correlation is

a) .32

b) .26

- c) .49
- d) .93

75. The coefficient of correlation is -----of two regression coefficients

- a) AM
- b) GM
- c) HM
- d) none of these

76. If the regression lines are $8X - 10Y + 66 = 0$ and $40X - 18Y - 214 = 0$ the correlation between x and y is

- a) 1
- b) .60
- c) -.60
- d) -1

77. If 2 variables are uncorrelated their regression lines are

- a) parallel
- b) perpendicular
- c) inclined to 45 degrees
- d) coincident

78. The r_{xy} is computed as -.38. X and U are related to $3x + 5u - 3 = 0$ and y and v are related to $-8x - 7v - 44 = 0$ then r_{uv} shall be calculated as

- a) .38
- b) -.38
- c) .40
- d) none of these

79. If two regression lines are coincident and line is $4x + 3y - 7 = 0$ the coefficient of correlation between x and y is

- a) positive
- b) negative

- c) no relation
- d) none of these

80. If each individual is allotted exactly opposite rank by two judges the coefficient of correlation will be

- a) perfectly positive
- b) perfectly negative
- c) high degree negative
- d) none of these

81. If coefficient of alienation is computed as .6 the value of r is

- a) .8
- b) .6
- c) 1
- d) none of these

82. Out of the following the one which affects the regression coefficient is

- a) change of origin
- b) change of scale
- c) both
- d) neither of the two

83. If A and B are two independent events and $P(A) = 3/8$, $P(B) = 1/2$ and $P(A \cap B) = 1/4$ the value of $P(A^1 \cup B^1)$ is

- a) $1/4$
- b) $3/4$
- c) $5/8$
- d) $5/4$

84. If A and B are two events of a random experiment and Probability of occurrence of A is $1/5$ and probability of occurrence of B provided A had happened is $1/10$, the probability of non occurrence of at least one of the two events is

- a) $1/50$
- b) $1/25$
- c) $13/50$

d) $49/50$

85. 30. A and B are two independent events and probability of occurring either of the two is $2/5$ and $P(B)$ is $1/3$ the $P(A)$ is

a) $2/9$

b) $1/3$

c) $2/10$

d) $1/10$

86. If two independent events A and B are such that $P(A) = 1/4$, $P(B) = 2/5$ and $p(A \cup B) = 1/2$ then probability of A NOT B is

a) $3/7$

b) $2/10$

c) $1/10$

d) none of these

87. an urn 1 contains 2 white and 3 black balls and urn 11 contains 4 white and 6 black balls a ball is shifted from urn 1 to urn 11 and subsequently a ball is drawn from urn 11 find Probability it is not white

a) $43/65$

b) $24/46$

c) $33/55$

d) $24/45$

88. Four married couples have gathered in a party. two persons are selected at random from them find probability of getting one male and female but not a married couple,

a) $1/7$

b) $3/7$

c) $1/8$

d) $3/8$

89. A 4 digit number is formed with 1,2,3,5,7,9 find probability number formed is greater than 5700

a) $2/5$

b) $3/5$

c) $1/5$

d) none of these

90. A 4 digit number is formed with the digits 1 to 9 find Probability the number formed is less than 4500

a) 37.50%

b) 44%

c) 52%

d) none of these

91. 35. An urn contains 2 red and 1 green ball another urn contains 2 red and 2 green ball a ball is drawn from either of the two urns and found RED find probability it is not drawn from urn 2

a) $4/7$

b) $3/7$

c) $2/3$

d) none of these

92. From 6 positive and 8 negative numbers four are selected at random. find probability the product of 4 numbers is positive

a) $409/1001$

b) $70/1001$

c) $505/1001$

d) $420/1001$

93. An experiment succeeds twice as often as it fails find probability out of next 5 trials at least there will be three successes

a) $33/81$

b) $46/81$

c) $64/81$

d) $25/81$

94. The mean of poisson distribution is 1 find probability of getting at least one

a) .456

b) .821

c) .632

d) .254

95. In a Binomial Distribution if mean is K times the variance the value of K is

a) p

b) $1/p$

c) $1-p$

d) $1/q$

96. The result of cricket match between India and Australia follow which distribution of probability

a) Binomial

b) Poisson

c) Normal

d) none of these

97. If 4 is added to all the observations the mean and median would be

a) added by 4

b) unchanged

c) only mean will change

d) none of these

98. In a normally distributed curve with 25 observations the median is computed as 35 two extreme values 100 and 10 are interchanged the new median would be

a) 35

b) 45

c) 25

d) none of these

99. The arithmetic mean of 50 items was computed as 23 and a constant variable a is added to all the observations, new AM was changed to 27 the value of a is

a) 200

b) 4

c) 50

d) none of these

100. A pair of dice is thrown Probability of getting a total of 8 if there is a doublet
- a) $5/36$
 - b) $6/36$
 - c) $1/36$
 - d) none of these