

M.K.G CA EDUCATION

9811429230 / 9212011367

WEBSITE: WWW.MKGEDUCATION.COM

EMAIL: MKGCAEDUCATION@GMAIL.COM

Youtube channel: https://www.youtube.com/channel/UCUFLIGc27drK59pH_273UVw?view_as=subscriber

Facebook Page: <https://www.facebook.com/mkgcaeducation/>

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TEST – 5

QUESTION BOOKLET CODE: MKG

QUESTION PAPER BOOKLET NO. 5092021

CA FOUNDATION

(18-09-2021 3:30 p.m. to 5:30 p.m.)

Business Mathematics and Logical Reasoning & Statistics

CHAPTERS

1. Complete Syllabus

Time allowed: 2 hours

Maximum Marks: 100

Instructions:

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

01. Which is not the condition of Symmetrical series

- a) Median is Arithmetic Mean of both the Quartiles
- b) Both the quartiles are equi – distant from Median
- c) All the central values Mean, Median and Mode are equal
- d) none of these

02. if Probability of success is half of the probability of failure the Distribution is

- a) positively skewed
- b) Negatively skewed
- c) Symmetrical
- d) none of these

03. The value of money is decreased to 92% indicates Dearness Allowance is required to be paid by

- a) 8%
- b) 8.70%
- c) 11%
- d) none of these

04. In which of the following distribution the shape of curve is changed with the change in Probability
- Binomial Distribution
 - Poisson's Distribution
 - Normal Distribution
 - None of these
05. In which of the Distribution The value of Mean and Variance is same
- Binomial Distribution
 - Poisson's Distribution
 - Normal Distribution
 - None of the above
06. The price index computed by Dr Bowley is always -----than the price index computed by Fisher
- Greater than
 - lower than
 - equal to
 - none of these
07. If b_{yx} is computed as 1.90 and there is relation of $3x + 4u - 9 = 0$ and $5y + 7v + 9 = 0$ the regression coefficient v on u (b_{vu}) is
- 1.81
 - 1.81
 - 2,80
 - none of these
08. If two regression lines are $4x + 5y - 8 = 0$ and $7x + 3Y - 9 = 0$ Then the co efficient of determination is
- 34 %
 - .58
 - .34
 - none of these
09. If r_{xy} is computed as .65 and $3x - 4y + 7 = 0$ and $6x + 9y - 8 = 0$ the co relation in u and v (r_{uv}) is
- .65
 - .65
 - .28
 - none of these

10. While computing coefficient of correlation by rank differential method of 10 observations the difference in 2 ranks is wrongly taken as 6 instead of 5 compute correct coefficient of correlation if computed $r = .64$
- .79
 - .61
 - .71
 - none of these
11. If RD_x is 50 and x and y are related to $7x + 5y - 70 = 0$ The variance of $(5y-9)$ shall be
- 30616
 - 1225
 - 30625
 - None of these
12. If 12 is added to all the observations the value of C/V will -----
- Increase
 - decrease
 - remain constant
 - data insufficient
13. If the word COMMUNITY is written in different ways find probability the vowels will occupy odd places
- 5/42
 - 7/42
 - 11/89
 - none of these
14. A and B stand with 7 more persons in a queue find probability exactly 4 persons are between them
- 2/81
 - 4/9
 - 1/9
 - none of these
15. In a manufacturing unit 2.5% items produced are defective find probability out of 200 items not more than one item is defective
- 4.40%
 - 4.04%
 - 7.97%
 - none of these

16. Time reversal & factor reversal are:

- a) Quantity index
- b) Ideal index
- c) Price Index
- d) Test of consistency

17. Circular test is an extension of _____.

- a) Factor Reversal Test
- b) Time Reversal Test
- c) Neither of the two
- d) Both (a) and (b)

18. In a normally distributed factory with Mean 20,000 and Standard deviation 6000 the value of upper quartile shall be

- a) 21953
- b) 30047
- c) 4000
- d) none of the above

19. If A B C are exhaustive events and $3P(A) = 6P(B) = 2P(C)$ the $P(A)$ shall be

- a) $1/9$
- b) $1/3$
- c) $1/6$
- d) none of the above

20. In an examination if average marks scored was 68% but girls scored 75% and boys scored 62 % the percentage of girls among examinees are

- a. 46.15%
- b. 53.85%
- c. 44.89%
- d. None of these

21. Find EMI if Rs 43 lacs is required to be repaid in 6 years @ 9% p.a.

- a. Rs 77510
- b. Rs 73450
- c. Rs 85045
- d. None of these

22. Find amount receivable after 11 years if Rs 40,000 quarterly is invested @ 11% pa
- 35 78 905
 - Rs 3344201
 - 1760000
 - None of these
23. A plant was purchased 7 years ago for a cost of Rs 65 lacs find the rate of depreciation if present written down value is 30.90 lacs
- 12.09%
 - 11.08%
 - 10.08%
 - None of these
24. Find Amount after 6 years 3 months if Rs 45 lacs is invested @ 10%pa to be compounded quarterly
- Rs 83 42 748
 - Rs 8243780
 - Rs 76 89 760
 - none of these
25. A company wishes to replace a plant costing Rs45 lacs after 9 years when prices will be increased by 20% Find annual provision for replacing the plant if opportunity cost is 11% p.a.
- 341600
 - Rs 381250
 - Rs 356670
 - None of these
26. If $f(x) = \frac{1}{4\sqrt{2\pi}} e^{-\frac{(x-10)^2}{32}}$ is the density function find C/V
- 40%
 - 60%
 - 70%
 - None of these
27. 4 coins were tossed 1600 times. What is the probability that all 4 coins do not turn head upward at a time?
- $1600 e^{-100}$
 - $1000 e^{-100}$
 - $100 e^{-1600}$
 - e^{-100}

28. If $X \sim N(50, 16)$, then which of the following is not possible:

- a) $P(X > 60) = 0.30$
- b) $P(X < 60) = 0.40$
- c) $P(X < 50) = 0.50$
- d) $P(X > 50) = 0.50$

29. For a normal distribution having mean = 2 and variance = 4, the fourth central moment is

- a) 16
- b) 32
- c) 48
- d) 64

30. The salaries of A, B and C are in the ratio 2 : 3 : 5. If increments of 15%, 10% and 20% are allowed respectively to their salary, then what will be the ratio of their salaries?

- a) 3 : 3 : 10
- b) 10 : 11 : 20
- c) 23 : 33 : 60
- d) Cannot be determined

31. The harmonic Mean of the roots of the equation

$$(5 + \sqrt{2})x^2 - (4 + \sqrt{5})x + 8 + 2\sqrt{5} = 0$$

- a) 2
- b) 4
- c) 6
- d) 8

32. A man invested one-third of his capital at 7% one fourth at 8% and the remainder at 10%. If the annual income is ₹ 561. The capital is –

- a) ₹ 4,400
- b) ₹ 5,500
- c) ₹ 6,600
- d) ₹ 5,800

33. Eight Chairs are numbered from 1 to 8. Two women and three men are to be seated by allowing one Chair for each. First, the woman choose the chairs from the chairs numbered 1 to 4 and then men select the chairs from the remaining.

The number of possible arrangement is

- a) 120

- b) 288
- c) 32
- d) 1440

34. How many odd numbers of four digit can be formed with digit 0, 1, 2, 3, 4, 7 and 8

- a) 150
- b) 300
- c) 120
- d) 210

35. ${}^n C_p + 2^n C_{p-1} + {}^n C_{p-2}$

- a) ${}^n C_p$
- b) ${}^{n+2} C_p$
- c) ${}^{n+1} C_{p+1}$
- d) ${}^{n+2} C_{p+1}$

36. Sum upto infinity of series

$$\frac{1}{2} + \frac{1}{3^2} + \frac{1}{2^3} + \frac{1}{3^4} + \frac{1}{2^5} + \dots \dots \dots$$

- a) $\frac{19}{24}$
- b) $\frac{24}{19}$
- c) $\frac{5}{24}$
- d) None of these

37. In a town of 20,000 families, it was found that 40% families buy newspaper A, 20% families buy newspaper B and 10% families buy newspaper C, 5% families buy A and B, 3% buy B and C and 4% buy A and C. if 2% families buy all the three newspaper, then the number of families which by A only is:

- a) 6600
- b) 3600
- c) 5600
- d) 600

38. If $A = \{x : x^2 - 3x + 2 = 0\}$,

$B = \{x : x^2 - 4x - 12 = 0\}$, then

$B-A$ is Equal to

- a) $\{-6\}$
- b) $\{1\}$

c) $\{1, 2\}$

d) $\{2, -6\}$

39. If $A = \{\pm 2, \pm 3\}$, $B = \{1, 4, 9\}$ and $F = \{(2, 4), (-2, 4), (3, 9), (-3, 9)\}$ then 'F' is defined as:

a) One to one function from A into B

b) One to one function from A onto B

c) Many to one function from A onto B.

d) Many to one function from A into B.

40. The average cost function of a good is $2Q + 6 + \frac{13}{Q}$ where Q is the quantity produced. The Approx cost at Q

= 15 is:

a) 42

b) 36

c) 66

d) 130

41. $\int_1^2 e^x \left(\frac{1}{x} - \frac{1}{x^2} \right) dx =$

a) $e \left(\frac{e}{2} - 1 \right)$

b) $e(e - 1)$

c) a

d) $e^2(e - i)$

42. The ratio of two numbers are 3:4. The difference of their square is 28 Greater no. is:

a) 8

b) 12

c) 24

d) 64

43. The ratio of number of boys and the number of girls in a school is found to be 15 : 32. How many boys and equal number of girls should be added to bring the ratio to 2 : 3

a) 19

b) 20

c) 23

d) 27

44. If $a = \sqrt{\frac{7+4\sqrt{3}}{7-4\sqrt{3}}}$ then find the value of $[a(a - 14)]^2$

a) 1

- b) 2
- c) -1
- d) None of these

45. If HONEY is coded as JQPGA, which word is coded as VCTIGVU?

- a) CARPETS
- b) TRAPETS
- c) UMBRELU
- d) TARGETS

46. Find odd man out of the following series 15, 21, 63, 81, 69

- a) 15
- b) 21
- c) 63
- d) 81

47. Find the next number in the series: 1, 1, 2, 6, 24, 120....

- a) 720
- b) 600
- c) 900
- d) None of these

48. Find the missing value in the series 0, 2, 3, 6, 10, 17, 28, ?, 75.

- a) 58
- b) 46
- c) 48
- d) 54

49. Find the wrong term in: G4T, J10R, M2OP, P43N, S90L

- a) M2OP
- b) P43N
- c) J10R
- d) G4T

A, B, C, D, E, F and G are sitting in a straight-line facing North. There is only one person between F and C. E sits between A and D. There are only two persons between E and G. F sits on the immediate left of A, and sits in the middle of the row.

50. How many persons are there between E & F?

- a) 1
- b) 2
- c) 3
- d) 4

51. Who among the following sit at the extreme ends of the row?

- a) D, B
- b) G, C
- c) B, C
- d) None of these

52. Who among the following sit on the immediate left of D?

- a) G
- b) E
- c) F
- d) B

53. Who among the following sits third to the left of A?

- a) C
- b) G
- c) B
- d) E

54. Which is true with regard to B?

- a) B is second to the right of A.
- b) B is fourth to the left of G.
- c) B sits at the extreme right.
- d) B sits at the extreme left.

55. Pointing to a lady in a photograph, Ram said "Her son's father is the son in law of my mother". How lady is related to ram

- a) Aunt
- b) Cousin
- c) Sister

d) Mother

56. A girl introduced, a boy as the son of daughter of father of her uncle. The boy is girl's

a) Son

b) Brother

c) Daughter

d) Son-in-Law

57. In a poisson's if C/V is 50% find 4th moment

a) 48

b) 16

c) 12

d) None of these

58. If there are two groups with n_1 and n_2 observations and H_1 and H_2 are respective harmonic means, then the harmonic mean of combined observation is

a) $\frac{n_1 H_1 + n_2 H_2}{n_1 + n_2}$

b) $\frac{n_1 H_1 + n_2 H_2}{H_1 + H_2}$

c) $\frac{n_1 + n_2}{n_1 H_1 + n_2 H_2}$

d) $\frac{(n_1 + n_2) H_1 \times H_2}{n_1 H_2 + n_2 H_1}$

59. The odds that a book will be favourably received by 3 independent reviewers are 5 to 2, 4 to 3 and 4 to 3 respectively. What is the probability that out of 3 reviewers a majority will be favourable.

a) $\frac{57}{80}$

b) $\frac{47}{80}$

c) $\frac{21}{80}$

d) None of these

60. 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) $\frac{1}{64}$

61. What is the probability of getting 7 or 11 when two dices are thrown?

a) $\frac{2}{9}$

b) $\frac{6}{36}$

c) $\frac{10}{36}$

d) $\frac{2}{36}$

62. When 2 fair dice are thrown what is the probability of getting the sum which is multiple of 3?

a) $\frac{4}{36}$

b) $\frac{13}{36}$

c) $\frac{2}{36}$

d) $\frac{12}{36}$

63. The 1.Q. 's of army volunteers in a given year are normally distributed with Mean = 110 and standard Deviation = 10. The army wants to give advance training to 20% of those recruits with the highest scores. What is the lowest 1.Q score acceptable for the advanced training? The value of Z for the area 0.3 = 0.84.

a) 0.84

b) 118.4

c) 138.4

d) 115.4

64. In Poisson distribution, if $P(x = 2) = \frac{1}{2} P(x = 3)$ find m?

a) 3

b) $\frac{1}{6}$

c) 6

d) $\frac{1}{3}$

65. In a binomial distribution B (n, p)

$$P(x = 2) = 3x P(x = 3) \text{ find } P \text{ if } n = 4$$

a) $\frac{1}{3}$

- b) $\frac{2}{3}$
 c) $\frac{6}{4}$
 d) $\frac{4}{3}$

66. In the parameter of Poisson distribution is m and $(\text{Mean} + \text{S.D.}) = \frac{6}{25}$ then find m :

- a) $\frac{3}{24}$
 b) $\frac{1}{25}$
 c) $\frac{4}{25}$
 d) $\frac{3}{5}$

67. A coin with probability for head as $\frac{1}{5}$ tossed 100 times. The standard deviation of the number of heads turned up is

- a) 3
 b) 2
 c) 4
 d) 6

68. Scatter diagram does not help us to?

- a) Find the type of correlation
 b) Identify whether variables correlated or not
 c) Determine the linear or non-linear correlation
 d) Find the degree of correlation numerical value of correlation coefficient

69. Find the sum of $2.5 + 3.6 + 4.7 + 5.8 + \dots + S_n$

- a) $\frac{1}{6}n(n+1)(2n+1) + \frac{5n}{2}(n+1) + 4n$
 b) $\frac{1}{6}n(n+1)(2n+1) - \frac{5n}{2}(n+1) + 4n$
 c) $\frac{1}{6}n(n+1)(2n+1) + \frac{5n}{2}(n+1) - 4n$
 d) None of these

70. If $a = \frac{4\sqrt{28}}{\sqrt{7}+\sqrt{4}}$ find the value of $\frac{a+2\sqrt{7}}{a-2\sqrt{7}} + \frac{a+2\sqrt{4}}{a-2\sqrt{4}}$

- a) 2
 b) $\frac{1}{2}$
 c) 4

d) None of these

71. If $x = \sqrt{42 + \sqrt{42 + \sqrt{42 + 42 \dots \dots \dots \infty}}}$ the value of x is

a) 7

b) 6

c) 10

d) None of these

72. If $x = 5^{\frac{1}{3}} + \frac{1}{5^{\frac{1}{3}}}$ the value of $5x^3 - 15x$ is

a) 26

b) 20

c) 27

d) None of these

73. If $3^x = 5^y = 1875^z$ find $z = ?$

a) $\frac{xy}{4x+y}$

b) $\frac{xy}{x+4y}$

c) $\frac{4xy}{x+y}$

d) None of these

74. If $(4.80)^x = (.48)^y = 10000$ then

a) $\frac{1}{x} - \frac{1}{y} - \frac{1}{4} = 0$

b) $\frac{1}{x} + \frac{1}{y} + \frac{1}{4} = 0$

c) $\frac{1}{x} + \frac{1}{y} - \frac{1}{4} = 0$

d) None of these

75. In a poisson distribution $2P(x = 3) = 5P(x = 5)$ Find 4th moment

a) 24

b) 164

c) 142

d) None of these

76. In a hall there are 10 chairs Numbered 1 –10. 3 ladies and 4 gents are made to sit, if ladies opt first out of the chairs Numbered 1 to 5 and gents opt out of the remaining find in how many ways they can be made to sit

a) 2,100

b) 50,400

- c) 8,400
- d) None of these

77. 10 persons are made to sit in a circle find P. neighbours are never together

- a) 181440
- b) 362880
- c) 184440
- d) None of these

78. Out of 6 gents and 4 ladies a committee is to be formed consisting of at least 2 ladies and atleast double the gents in how many ways it can be formed

- a) 136
- b) 62
- c) 60
- d) None of these

79. If the word **SUPPORT** is written in different ways find probability vowels occupy odd places

- a) $\frac{2}{7}$
- b) $\frac{3}{7}$
- c) $\frac{6}{7}$
- d) None of these

80. 4 digit numbers is formed with 0, 2, 3, 4 and 5 find probability number is divisible by other than 5

- a) $\frac{7}{16}$
- b) $\frac{9}{16}$
- c) $\frac{5}{16}$
- d) None of these

81. Find the sum of all 5 digit numbers formed with 2, 3, 5, 7 and 9

- a) 69,33,264
- b) 67,29,462
- c) 69,19,624
- d) None of these

82. If x & y are related by $3x - 5y + 7 = 0$, find variance of $(3x + 9)$ if $QD_y = 9$

- a) 4,556.25
- b) 67.50

- c) 506.25
 d) None of these

83. $\int e^{2x} x^4 dx$

- a) $\frac{e^{2x}}{2} \left[x^4 - \frac{4x^3}{2} + \frac{12x^2}{4} - \frac{24x}{8} + \frac{24}{16} \right] + k$
 b) $\frac{e^{2x}}{2} \left[x^4 + \frac{4x^3}{2} + \frac{12x^2}{4} + \frac{24x}{8} + \frac{24}{16} \right] + k$
 c) $\frac{e^{2x}}{2} \left[x^4 - \frac{4x^3}{2} - \frac{12x^2}{4} - \frac{24x}{8} - \frac{24}{16} \right] + k$
 d) None of these

84. $\int x^3 4^x dx$

- a) $\frac{4^x}{\log 4} \left[x^3 \frac{-3x^2}{\log 4} - \frac{6x}{2 \log 4} + \frac{6}{3 \log 4} \right] + k$
 b) $\frac{4^x}{\log 4} \left[x^3 \frac{-3x^2}{\log 4} + \frac{6x}{2 \log 4} + \frac{6}{3 \log 4} \right] + k$
 c) $\frac{4^x}{\log 4} \left[x^3 \frac{-3x^2}{\log 4} + \frac{6x}{2 \log 4} - \frac{6}{3 \log 4} \right] + k$
 d) None of these

85. Find x if $|3x-9| \leq 15$

- a) $-5 \leq x \leq 5$
 b) $-2 \leq x \leq 8$
 c) $x \geq 8$
 d) None of these

86. Find the ratio of SD

X 101 102 103 104 105 106200

Y 201 202 203 204 205 206300

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

87. $\int \frac{xe^x}{(x+1)^2} dx$

- a) $\frac{e^x}{x-1}$
 b) $\frac{e^x}{(x+1)^2}$
 c) $\frac{e^x}{x+1}$
 d) None of these

88. If 10 is added to all the observations the C/V is 15% and if 12 is deducted from all the observations the C/V is 28% find present C/V.

- a) 19%
- b) 20%
- c) 22%
- d) None of these

89. $\int_0^7 \frac{\sqrt{7-x}}{\sqrt{x}+\sqrt{7-x}} dx$

- a) $\frac{7}{2}$
- b) $\frac{7}{4}$
- c) $\frac{2}{7}$
- d) None of these

90. The average of salaries in a factory is ₹ 47,000. The Statement that the average salary ₹ 47,000 is _____

- (a) Descriptive statics
- (b) Inferential
- (c) Detailed
- (d) Undetailed

91. Statics cannot deal with _____ data.

- (a) Quantitative
- (b) Qualitative
- (c) Textual
- (d) undetailed

92. Sweetness of a sweet dish is:

- (a) Attribute
- (b) Discrete variable
- (c) Continuous variable
- (d) Variable

93. Census report are used as a source of _____ date.

- (a) Secondary
- (b) Primary
- (c) Organize
- (d) Confidential

94. Types of cumulative frequencies are:

- (a) 1
- (b) 2
- (c) 3
- (d) 4

95. You are an auditor of a firm and the firm earn a profit of ₹ 67,000 you stated to them that the annual profit is ₹ 67,000. This is _____ type of statistics

- (a) Descriptive
- (b) Detailed
- (c) Non detailed
- (d) inferential

96. The ___ are used usually when we want to examine the relationship between two variables.

- (a) Bar Graph
- (b) Pie Chart
- (c) Line Chart
- (d) Scatter Plot

97. When data are classified according to one criterion, then it is called _____ classification

- (a) Quantitative
- (b) Qualitative
- (c) Simple
- (d) factored

98. Given the weights for the numbers 1, 2, 3.....n are respectively $1^3, 2^3, 3^3, \dots, n^3$ then weighted HM is ____.

- (a) $\frac{3n(n+1)}{2(2n+1)}$
- (b) $\frac{2n(n+1)}{3(2n+1)}$
- (c) $\frac{2n(n+1)}{(2n+1)}$

(d) None of these

99. 50th Percentile is equal to

- (a) Median
- (b) Mode
- (c) Mean
- (d) None of these

100. The harmonic mean A and B is $\frac{1}{3}$ and harmonic mean of C and D is $\frac{1}{5}$. The harmonic mean of ABCD is

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

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

(c) $\frac{1}{15}$

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

**“BEST of
LUCK”**