

M.K.G CA EDUCATION

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TEST-3

CA FOUNDATION

(17-08-2021 3:30 p.m. to 5:30 p.m)

Business Mathematics and Logical Reasoning & Statistics

CHAPTERS

- | | |
|--------------------------------|--|
| 1. Sequence and Series | 5. Ratio, proportion, Indices and Logarithmic |
| 2. Time value of Money | 6. Computation of Central Tendency & Dispersions |
| 3. Permutation and Combination | 7. Co-Relation & Regression Lines |
| 4. Equations | 8. Introduction of Probability |

Time allowed: 2 hours

Maximum Marks : 100

Instructions:

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

01. $\log_2 \sqrt{2} 512 : \log_3 \sqrt{3} 324$ is equal to

- a) 128:81
- b) 4:3
- c) 3:2
- d) none of these

02. Find condition that one root is double to the other in equation $ax^2+bx+c=0$

- a) $2b^2=3ac$
- b) $b^2=3ac$
- c) $2b^2=9ac$
- d) none of these

03. if $y=1-x+x^2+x^3+\dots$ up to infinity the value of x is

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

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

c) $\frac{4}{4-x}$

d) none of these

04. in GP If $T_4= 3$ the product of first seven term shall be

a) 3^5

b) 3^6

c) 3^7

d) none of these

05. In a simple interest if the principal is Rs 2000 and rate and time are roots of the equation $x^2-11x+30=0$. The simple interest will be

a) 500

b) 600

c) 700

d) none of these

06. What is the present value of perpetuity of Rs 50,000 pm @12% p.a

a) Rs 45,00,000

b) Rs 60,00,000

c) Rs 50,00,000

d) none of these

07. Compute Probable error if $r = \frac{2}{\sqrt{10}}$ and $n = 36$

a) .6667

b) .06745

c) .5287

d) none of these

08. The number of parallelograms that can be formed by a set of 6 horizontal and 4 vertical lines,

a) 60

b) 90

c) 120

d) none of these

09. While computing coefficient of co relation of 36 items the Probable error is computed as 0.024 Find co – efficient of non-determination.

- a) 21.60 %
- b) 78.40%
- c) 46.48%
- d) none of these

10. while computing co efficient of co relation of 10 items by rank differential method, the difference in two ranks is wrongly taken as 5 instead of 4 if computed r_k is .65 the actual r_k is

- a) .83
- b) .92
- c) .70
- d) none of these

11. If one of the roots of equation $3x^2 - 2kx + 5 = 0$ is 2 the value of k is

- a) 17/4
- b) 4/17
- c) -17/4
- d) none of these

12. If $\log_{0.1}(10,000) = x$ the value of x is

- a) 1
- b) -2
- c) -4
- d) none of these

13. The sum of first five terms of A P is 75 find the third term

- a) 15
- b) 20
- c) 25
- d) none of these

14. If $a : b = 2 : 3$, $b : c = 4 : 5$ $C : D = 6 : 7$ find ratio of $A : B : C : D$

- a) 16 : 24 : 30 : 35
- b) 24 : 30 : 16 : 35
- c) 16 : 24 : 35 : 30
- d) none of these

15. $\log (1^3 + 2^3 + 3^3 + \dots + n^3)$ is equal to

- a) $2\log n + 2\log(n+1) - 2\log 2$
- b) $\log n + 2\log(n+1) - 2\log 2$

- c) $2\log n + \log(n+1) - 2\log 2$
 d) None of these

16. If difference in roots of the equation $x^2 - kx + 8 = 0$ is 4 the value of k is

- a) ± 4
 b) $\pm 8\sqrt{3}$
 c) $\pm 4\sqrt{3}$
 d) none of these

17. if $2^{x^2} = 3^{y^2} = 12^{z^2}$ then

- a) $\frac{1}{x^2} + \frac{1}{y^2} = \frac{1}{z^2}$
 b) $\frac{2}{x^2} + \frac{1}{y^2} = \frac{1}{z^2}$
 c) $\frac{1}{x^2} + \frac{2}{y^2} = \frac{1}{z^2}$
 d) None of these

18. Find the value of

$$\log_5 \left(1 + \frac{1}{5}\right) + \log_5 \left(1 + \frac{1}{6}\right) \dots \dots \dots + \log_5 \left(1 + \frac{1}{624}\right) =$$

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

19. if $x = \frac{1}{5+2\sqrt{6}}$ then the value of $x^2 - 10x + 1$ is

- a) 0
 b) $\sqrt{15} + \sqrt{3}$
 c) 10
 d) None of these

20. If A B C D E and F are made to sit in a circle, in how many ways it is possible if A always have either B or C on his right and B always have either C or D on his right

- a) 3
 b) 6
 c) 18
 d) none of these

21. In how many ways MONDAY can be written starting with M but not ending with N

- a) 720
- b) 120
- c) 96
- d) none of these

22. A polygon has 44 diagonals the number of sides are

- a) 8
- b) 9
- c) 10
- d) none of these

23. Find the value of x if ${}^{10}C_3 + 2 {}^{10}C_4 + {}^{10}C_5 = {}^x C_5$

- a) 10
- b) 12
- c) 14
- d) none of these

24. While computing r of 25 items Standard error is computed as .036 ,the co efficient of correlation is

- a) high degree
- b) low degree
- c) linear
- d) none of these

25. In Co relation by Karl Pearson method $r = .70$ SD_X and SD_{Y_I} is 12 and 18 respectively the value of

Cov (x, y) is

- a) 151.20
- b) 109.78
- c) 105.36
- d) none of these

26. If $b_{xy} = 1.56$ and x and u are related to $3x + 4u - 9 = 0$ and Y and v are related to $4y - 5v + 6 = 0$ the regression co efficient b_{uv} is

- a) -1.46
- b) 1.46
- c) -1.56
- d) none of these

27. Two regression lines are $4x - 5y + 9 = 0$ and $6x - 4y - 6 = 0$, the Co efficient of determination is

- a) 47%

- b) 53%
- c) 73%
- d) none of these

28. Higher the value of r indicates

- a) Lower the degree of co relation
- b) Higher the degree of co relation
- c) Linear relation
- d) None of these

29. If two regression lines are $5x+6y-10=0$ and $3x+9y-8=0$ Find regression co efficient x on y (b_{xy})

- a) -1.20
- b) 1.20
- c) can't be determined
- d) none of these

30. If difference in mean and median is 30 the difference in mean and mode is

- a) 90
- b) 10
- c) 30
- d) none of these

31. Which is not the condition of symmetrical series

- a) Median is equi-distant from both the quartiles
- b) Median is Arithmetic Mean of quartiles
- c) it is always Bi –Modal
- d) none of these

32. Change of -----is independent of deviations

- a) origin
- b) scale
- c) both of above
- d) none of these

33. If two Regression Co efficient are 1.90 and .20 the co efficient of non-determination is

- a) 14 %
- b) 62%
- c) .86%
- d) none of these

- 34.** The Co-relation (r) is always lower than
- Arithmetic mean of regression coefficients.
 - Geometric Mean of regression coefficients
 - Harmonic Mean of regression coefficients
 - None of these
- 35.** Table has ----- parts
- four
 - five
 - three
 - none of these
- 36.** Find fort-nightly saving If Rs 5,80,000 is required after a period of 24 months @ 6% pa
- 11888
 - 12904
 - 11388
 - none of these
- 37.** Find issue price of 10% bond of Rs 2000 redeemable after 7 years at 5% premium if opportunity cost is 15% p.a.
- 1709
 - 1621
 - 1591
 - None of these
- 38.** If 10 is added to all the observations the C/V is 12% and if 10 is subtracted from all the observations the C/V is 24%, the present coefficient of variation is
- 16 %
 - 21%
 - 28%
 - none of these
- 39.** The coefficient of variation of first 250 natural numbers is
- 58.10
 - 56.90
 - 57.50
 - none of these
- 40.** If x and y are related to $4x+5y-10 = 0$ and RD of x is 100 the QD of y is

- a) 29.31
- b) 26.66
- c) 33.52
- d) none of these

41. In an examination if average marks scored by all the students is 72% and average marks of girls and boys are 64% and 82% the ratio of girls to boys are

- a) 5 : 4
- b) 4 : 5
- c) 3 : 4
- d) none of these

42. If the word STRAIGHT is written in different ways in how many ways the word starts with G and ends with T.

- a) 720
- b) 1440
- c) 360
- d) none of these

43. How many code words are possible with two alphabets followed by three digits between (1 to 9)

- a) 327600
- b) 331700
- c) 326700
- d) none of these

44. If there is linear relation in x and y and b_{xy} is 2.40 the value of b_{yx} is

- a) .58
- b) .42
- c) .32
- d) none of these

45. Which of the following is line x on y

$$3x+6y-8=0 \quad \text{and} \quad 5x-2y+7=0$$

- a) $3x+6y-8=0$
- b) $5x-2y+7=0$
- c) neither of the two
- d) both of them

46. If the word COMBINATION is written find Probability vowels occupy odd places

a) $\frac{1}{56}$

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

c) $\frac{2}{89}$

d) none of these

47. In a manufacturing unit if 1.50% items produced are defective find probability out of 200 items more than 2 items are defective

a) 50%

b) 57.50%

c) 05%

d) none of these

48. In -----Distribution the direction of curve changes with the change in value of p

a) Binomial

b) Poisson

c) Normal distribution

d) none of these

49. STUB is

a) upper part of the table representing Columns

b) Left part of the table representing Rows

c) main part of the table

d) none of these

50. HISTOGRAMME is used for computing

a) Median

b) Mode

c) Mean

d) none of these

51. While computing AM of 100 items an item 70 was not considered if computed Mean is 120 the actual mean is

a) 119.50

b) 120.70

c) 111.70

d) none of these

- 52.** If market price of a share is Rs 1100 and growth is 7% company had declared a dividend of Rs 35 during last year, the cost of equity capital is
- a) 10.18%
 - b) 10.40%
 - c) 3.09%
 - d) none of these
- 53.** Odds against A winning the game is 4:7 and odds in favour of B loosing the game is 3:5 the probability exactly one of the will win is
- a) 47/88
 - b) 43/88
 - c) 41/88
 - d) none of these
- 54.** A can hit the targets 5 out of 13 and B can hit the target 7 out of 11 find probability at least target will be hit if both try independently
- a) 111/143
 - b) 32/143
 - c) 76/143
 - d) none of these
- 55.** In a Symmetrical Binomial Distribution with 400 trials the Coefficient of variance is
- a) 5%
 - b) 10%
 - c) 15%
 - d) none of these
- 56.** If sum of Mean and variance of 5 trials is 1.80 the distribution is
- a) symmetrical
 - b) positively skewed
 - c) negatively skewed
 - d) none of these
- 57.** A and B stand in a queue with 5 more persons find probability exactly 4 persons are between them
- a) $\frac{1}{21}$
 - b) $\frac{3}{21}$
 - c) $\frac{2}{21}$

d) none of these

58. A 4 digit number is formed with 4, 6, 7, 9 and 5 find probability the number is greater than 6500

a) $\frac{33}{60}$

b) $\frac{33}{120}$

c) $\frac{16}{60}$

d) none of these

59. If 5 girls and 4 boys are made to sit in a circle find probability no 2 boys are together

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

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

c) $\frac{1}{14}$

d) none of these

60. A pair of dice is thrown find probability difference in 2 numbers is greater than 3.

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

b) $\frac{5}{6}$

c) $\frac{3}{6}$

d) none of these

61. If three dice are thrown Find probability of getting neither a triplet nor a total of 15

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

b) $\frac{65}{72}$

c) $\frac{67}{72}$

d) none of these

62. A and B throw a pair of dice till doublet appears if A starts the game find probability of winning B

a) $\frac{6}{11}$

b) $\frac{5}{11}$

c) $\frac{3}{11}$

d) none of these

63. If A B C are exhaustive events and $2P(A) = 3P(B) = 5P(C)$ find probability of B

a) $\frac{10}{31}$

b) $\frac{11}{31}$

c) $\frac{12}{31}$

d) none of these

64. If the word PRIAMBULAR is written in different ways find probability word start with either A or L

a) $\frac{3}{10}$

b) $\frac{2}{10}$

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

d) none of these

65. In a normally distributed factory with 20,000 workers the mean and standard deviation is 40,000 and 11,000 how many workers draw less than 7000

a) 26

b) 13

c) 52

d) none of these

66. In a normally distributed factory the two quartiles are 12,000 and 22,000 the C/V is

a) 43.60%

b) 46.30%

c) 49.10%

d) none of these

67. In a normally distributed factory with point of inflexions 42 and 82 the C/V is

a) 23%

b) 32%

c) 62%

d) none of these

68. From the following data

	A	B
Arithmetic Mean	200	300

Standard deviation	15	10
Number of items	300	200

Compute combined standard deviation

- a) 42.13
- b) 32.90
- c) 50.74
- d) none of these

69. The coefficient of variance will -----by adding some number in all the observations

- a) increase
- b) Decrease
- c) will remain unaffected
- d) none of these

70. If x and y are related to $4x+5y-9=0$ and RD_x is 100 the variance of $(3y - 9)$ is

- a) 12000
- b) 14400
- c) 12381
- d) none of these

71. The 4 signs out of 6 positive and 8 negatives are selected and multiplies the probability it is positive is

- a) $3/11$
- b) $1/7$
- c) $505/1001$
- d) none of these

72. The parameters of Binomial are

- a) n
- b) p
- c) both
- d) none of these

73. If x and y are related to $3x + 5y + 7 = 0$ The coefficient of correlation in x and y is

- a) Perfectly positive
- b) perfectly negative
- c) no relation
- d) none of these

74. b_{yx} is computed as 2.3 and $3x + 4u + 8 = 0$ while $4y + 5v + 7 = 0$ the regression coefficient v on u (b_{vu}) is
- 2.45
 - 2.45
 - 3.2
 - none of these
75. One ball from Bag 1 containing 6 Red and 5 White are shifted to Bag 2 containing 7 Red and 4 White balls and subsequently a ball is drawn from bag 1 Find probability it is red
- $\frac{6}{11}$
 - $\frac{83}{132}$
 - $\frac{30}{132}$
 - none of these
76. If HM of 2 variables is computed as 4 and their Arithmetic Mean and Geometric Mean satisfy the equation $2A + G^2 = 27$ then numbers are
- (1 and 3)
 - (9 and 5)
 - (6 and 3)
 - none of these
77. Measures of dispersions are called averages of the -----order
- 1st
 - 2nd
 - 3rd
 - none of the above
78. In a poisson's Distribution the $P(X=2) = 3P(X=4)$ The coefficient of variation is
- 50%
 - 100%
 - 30%
 - none of these
79. If two variables are uncorrelated their regression lines are
- parallel
 - perpendicular
 - coincide

d) none of these

80. If the word REGULATION is written in different ways find probability vowels occupy odd places

a) $1/252$

b) $1/144$

c) $144/252$

d) none of these

81. 6 married couples are gathered in a room, two persons are selected find probability one gentleman and one lady who is not the spouse of selected gentleman

a) $15/33$

b) $12/33$

c) $25/66$

d) none of these

82. A bag contains 5 Red 4 Blue and some Green balls. Two balls are drawn and probability of getting both Green is $1/7$. The number of Green balls in the bag are

a) 5

b) 7

c) 6

d) none of these

83. Marks obtained by number of students are assumed to be normally distributed with Mean 65 and variance 25. If 3 students are selected at random, the probability that exactly 2 will have marks more than 70.

a) 0.07

b) 0.08

c) 0.06

d) none of these

84. For a group of students 30% 40% and 50% failed in physics, chemistry and at least one of the two subjects respectively. If a candidate is selected at random what is the probability that he is passed in physics provided he is failed in chemistry

a) $1/3$

b) $1/2$

c) $1/4$

d) none of these

85. If X 12, Y and 27 are in proportion the value of X and Y are

a) (8,18)

b) (6 , 9)

C(12,!8)

d) none of these

86. If $(\log_{\sqrt{x}}2)^2 = \log_x 2$ the value of x will be

a) 16

b) 32

c) 8

d) none of these

87. How many different factors can be made with 1,05,600.

a) 127

b) 113

c) 119

d) none of these

88. A plant costing Rs 40,00,000 was depreciated @ 12% if written down value of plant is Rs 18,60,000 the plant is -----years old

a) 5

b) 6

c) 7

d) none of these

89. in how many ways at least 2 friends out of 10 can be invited

a) 1013

b) 975

c) 1024

d) None of these

90. if $2^a = 4^b = 8^c$ and $abc = 288$ then the value of $\frac{1}{2a} + \frac{1}{4b} + \frac{1}{8c}$ is

a) 1/8

b) 1/16

c) 11/96

d) none of these

91. if the value of $a=3+2\sqrt{2}$ find the value of $a^{\frac{1}{2}} - a^{-\frac{1}{2}}$

a) $2\sqrt{2}$

b) 2

- c) $-2\sqrt{2}$
 d) None of these

92. if the word GOOGLE is written in dictionary what is the rank of the word

- a) 88
 b) 48
 c) 196
 d) None of these

93. The product of three numbers in GP is 729 and the sum of their square is 819. The number are

- a) 3,9,27
 b) 9,3,27
 c) 27,3,9
 d) None of these

94. The amount on maturity if an amount of Rs 10,000 annually is invested starting from today @ 8% p.a for next 10 years

- a) Rs 1,56,454
 b) Rs 1,44,865
 c) Rs 1,56,554
 d) None of these

95. M/s A (mfg.) Ltd. wishes to replace a plant costing Rs 40,00,000 after 6 years when prices will increase by 30%. How much company should invest annually to replace the plant if opportunity cost is 10% pa

- a) Rs 6,73,959
 b) Rs 6,90,898
 c) Rs 7,28,976
 d) None of these

96. In an Ap if $T_{32} = \frac{1}{45}$ and $T_{45} = \frac{1}{32}$ The T_n will be

- a) $\frac{n}{1441}$
 b) $\frac{n}{1440}$
 c) $\frac{n}{1140}$
 d) None of these

97. A class with 200 students scored 65 marks as average if the average marks of girls and boys are 58 & 72 the ratio between girls: boys are

- a) 58:72
- b) 1:1
- c) 72:58
- d) None of these

98. The difference in simple interest and compound interest to be compounded quarterly @ 10% for 4 years is Rs 22,000 find the investment

- a) Rs 2,76,560
- b) Rs 2,54,350
- c) Rs 2,60,355
- d) None of these

99. The first and fifth term of an A.P. with 40 terms is -29 and -15 respectively, the sum of all positive terms of A.P. is

- a) 1605
- b) 1705
- c) 1805
- d) None of these

100. if $\log_2 X + \log_4 X + \log_{32} X = \frac{17}{10}$ value of x

- a) 8
- b) 5
- c) 2
- d) None of these