

# M.K.G CA EDUCATION

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## TEST-2

QUESTION BOOKLET CODE: MKG  
QUESTION PAPER BOOKLET NO. 2022023

### CA FOUNDATION

(19-02-2023 3:00 P.M. TO 5:00 P.M.)

### Business Mathematics and Logical Reasoning & Statistics

#### CHAPTERS

1. Permutation and Combination
2. Time Value of Money
3. Sequence and Series
4. Equation
5. Ratio, Proportion, Indices and Logarithmic
6. Probability
7. Dispersion
8. Co-Relation & Regression Lines

Time allowed: 2 hours

Maximum Marks: 100

#### Instructions:

1. Answer to be given in OMR sheet
2. Negative Marking Applies

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1. Find fortnightly installment if a loan of ₹ 35 lakh is repayable in 6 years @ 9% p.a.
    - (a) Rs 40700
    - (b) Rs 31,500
    - (c) Rs36.900
    - (d) None of these
  2. Find issue price of 12% Bond of ₹ 1000, redeemed after 9 years at 8% premium if market Rate is 15% p.a.
    - (a) Rs 880
    - (b) Rs 910
    - (c) Rs 930
    - (d) None of these

3. An amount of Rs 34 lakh was given to 2 persons @ 12% pa and @ 15% pa on simple interest if total interest after 2 years received is Rs 9,52,000. Find higher amount lent.
  - (a) Rs 11.33,333
  - (b) Rs 22,66,667
  - (c) Rs 23.87.667
  - (d) None of these
4. If a building is purchased on EMI Of Rs 40,000 @ 9% p.a. for 10 years and Rs 60,000 quarterly for next 6 years.
  - (a) Rs 42,61,010
  - (b) Rs 31,57,667
  - (c) Rs 47.89.987
  - (d) None of these
5. In a normally distribution labour intensive units with 30,000 workers 5% draw more than 50,000 and 5% of workers draw less than 15,000 find C/V( $Z=1.65@45\%$ )
  - (a) 28.98%
  - (b) 24.67%
  - (c) 32.63%
  - (d) None of these
6. In a Poisson distribution  $3P(x = 4) = 6P(x = 5)$  find 4<sup>th</sup> moment
  - (a) 18.75
  - (b) 16.90
  - (c) 17.60
  - (d) None of these
7. In a symmetrical Binomial Distribution with 324 trials, the 4<sup>th</sup> moment is
  - (a) 14578
  - (b) 18676
  - (c) 19683
  - (d) None of these
8. White computing co-efficient of r of 16 items the PE is computed as 0.016, find whether co relation is
  - (a) significant
  - (b) non-significant
  - (c) non associative
  - (d) None of these
9. If  $r_{xy} = .70$  and X and U are related to  $3x + 4u - 7 = 0$  and Y and V are related to  $4y - 6v + 9 = 0$  the co relation in U and V is
  - (a) .70
  - (b) -.70
  - (c) .89
  - (d) None of these
10. A person has 5 children but he can take only 2 along with him in movies. In how many ways he can manage, if the same children can't always go to movie
  - (a) 5
  - (b) 10

- (c) 4  
(d) None of these
11. If  $\alpha$  and  $\beta$  are the roots of equation  $3x^2 + 9x - 12 = 0$  the value of  $\alpha^2 - \beta^2$
- (a) 15  
(b) -15  
(c)  $\pm 15$   
(d) None of these
12. If  $a^2, b^2, c^2$  are in AP find the value of  $\frac{a}{b+c} + \frac{b}{c+a} + \frac{c}{a+b}$  is
- (a)  $\frac{15}{8}$   
(b)  $\frac{14}{9}$   
(c)  $\frac{16}{8}$   
(d) None of these
13. If the word G O U R M E T is written in different ways find Probability no two vowels are together
- (a)  $\frac{2}{7}$   
(b)  $\frac{5}{7}$   
(c)  $\frac{3}{7}$   
(d) None of these
14. If the word "F A S T I D I O U S" is written in different ways find probability vowels and consonants are written alternatively.
- (a)  $\frac{1}{126}$   
(b)  $\frac{1}{252}$   
(c)  $\frac{1}{504}$   
(d) None of these
15. If the word COMMERCE is written in different ways find probability 4 letters are written in between both the Ms
- (a)  $\frac{3}{28}$   
(b)  $\frac{5}{28}$   
(c)  $\frac{6}{28}$   
(d) None of these
16. Beg I  $\left[ \begin{array}{cc} \text{Red} & \text{Blue} \\ 4 & 6 \end{array} \right]$   
 Beg II  $[ 3 \quad 7 ]$   
 Beg III  $[ 5 \quad 5 ]$   
 A ball is selected and found Blue find Probability it is selected from beg II

- (a)  $\frac{7}{18}$   
 (b)  $\frac{5}{18}$   
 (c)  $\frac{11}{18}$   
 (d) None of these
17. If The word AMBIGUITY Is written in different ways find probability vowels occupy only even places  
 (a)  $\frac{1}{126}$   
 (b)  $\frac{2}{126}$   
 (c)  $\frac{7}{126}$   
 (d) None of these
18. While computing co efficient of co relation by Product Moment method of 36 items The Standard error is computed as 0.042, the upper limit of co relation is  
 (a) .832  
 (b) .888  
 (c) .862  
 (d) None of these
19. A Company had declared dividend @ Rs 300 three years back with 10% growth if cost of equity is 21% the Market Price of share is  
 (a) Rs 3,260  
 (b) Rs 3,630  
 (c) Rs 4,170  
 (d) None of these
20. Find Present Value of advance annuity of ₹ 15000 per month for next 4 years @ 9%p.a be if started from immediate effect.  
 (a) Rs 6.07,293  
 (b) Rs 5,92,293  
 (c) Rs 5.77,293  
 (d) None of these
21. An amount becomes double in 6 years if compounded semi-annually. How long it will take in becoming the amount triple if compounded monthly.  
 (a) 8 years 5 months  
 (b) 9 years 3 months  
 (c) 9 years 5 months  
 (d) None of these
22. The effective rate of interest is @ 19.75% p.a. if compounded fortnightly, the nominal rate of interest will be  
 (a) 18%  
 (b) 24%  
 (c) 27%  
 (d) None of these
23. The variance of Y is computed as 64 and co efficient of correlation between x and y is 0.40 the standard error of estimate of Y ON X is  
 (a) 7.42  
 (b) 6.87

- (c) 8.65  
(d) None of these
24. An amount becomes 1.64 times in 8 years if on Simple interest after how much time it will become 4 times if rate of interest is 1% higher  
(a) 33.33 years  
(b) 27.89 years  
(c) 32.76 years  
(d) None of these
25.  ${}^{(m+n)}P_4 = 840$  and  ${}^{(m-n)}P_4 = 120$  find m  
(a) 6  
(b) 7  
(c) 8  
(d) None of these
26.  $\frac{20^n + 5^n}{20^{n-1} + 5^{n-1}} = 10$  find  $(n + 3)$   
(a)  $-1/2$   
(b)  $1/2$   
(c)  $5/2$   
(d) None of these
27. In two Arithmetic progressions if ratio of nth term is  $(2n + 7) : (5n - 9)$  the ration of sum of 200 terms is  
(a) 987:208  
(b) 416:987  
(c) 52:242  
(d) None of these
28. In an AP if  $pT_p = qT_q$  the  $T_r$  terms is  
(a)  $p+q-r$   
(b)  $p-q+r$   
(c)  $p-q-r$   
(d) none of these
29. Find value  $(729), (729)^{\frac{1}{7}}, (729)^{\frac{1}{49}}, (729)^{\frac{1}{729}} \dots \dots \dots S_\infty$   
(a) 2187  
(b) 729  
(c) 6561  
(d) None of these
30.  $1 + \frac{6}{4} + \frac{11}{16} + \frac{16}{64} + \frac{21}{256} + \dots \dots \dots S_\infty$   
(a)  $32/9$   
(b)  $21/9$   
(c)  $23/9$   
(d) None of these
31. An amount becomes Rs18700 in 2 years and Rs 21,700 in 3 years if on simple interest find r  
(a) 12.28%  
(b) 11.19%  
(c) 19.11%

- (d) None of these
32. If  $\alpha$  &  $\beta$  are the roots of equation  $4x^2 - 16x + 24 = 0$  the value of  $3\alpha^3 + 4\alpha^2 + 5\alpha + 3\beta^3 + 4\beta^2 + 5\beta$  is
- (a) 12  
 (b) 18  
 (c) 24  
 (d) None of these
33. If economic growth of a country is 13% while inflation rate is 10.70% the net increase in Economy after 9 years will be
- (a) 15.89%  
 (b) 12.43%  
 (c) 22.71%  
 (d) None of these
34. If a project costing Rs 200 lacs will generate profit of Rs 23,00,000 for next 10 years and after that it will be sold for Rs 72.00 lakh find financial viability of project if cost of opportunity is 10% pa
- (a) NPV is equal to project cost  
 (b) Financial viable  
 (c) not viable financially  
 (d) none of these
35. If ALUMINUS: is coded as ULAIMSUN and HUMANNITY is coded as MUHNNAYTI then How the word C O U R T E S Y shall be coded
- (a) UOVTREYS  
 (b) UOVRTYES  
 (c) UOCTRYSE  
 (d) None of these
36.  $3x + 9y - 15 = 0$  and  $4x + 24y + 30 = 0$  find coefficient of alienation
- (a) .49  
 (b) .50  
 (c) .71  
 (d) None of these
37. X: 30      30      30      40      50      20      35  
 Y: 40      45      50      55      35      25      20  
 Find  $r_k$
- (a) 65  
 (b) .07  
 (c) .11  
 (d) None of these
38. Find sum of all 4-digit numbers formed with 0, 4, 5, 7,
- (a) 1,03,104  
 (b) 1.06.654  
 (c) 1,03,352  
 (d) None of these
39. Find sum of all 5 digit numbers formed with 3 3 3 5 6
- (a) 8,88,880

- (b) 7.78.899  
 (c) 6,76,980  
 (d) None of these
40. A 4 digit number is formed with 1, 3, 4, 5, 7, 9 find probability number formed lies between 4300 and 7500  
 (a)  $\frac{2}{5}$   
 (b)  $\frac{3}{5}$   
 (c)  $\frac{1}{5}$   
 (d) None of these
41. In an examination there are 2 parts A and B containing 7 and 9 questions respectively in how many ways at least 2 questions from each part can be solved.  
 (a) 61650  
 (b) 60240  
 (c) incomplete data  
 (d) None of these
42. An amount becomes triple in 10 years if compounded quarterly. Find rate of interest  
 (a) 6.98%  
 (b) 7.56%  
 (c) 8.32 %  
 (d) None of these
43. A, B, C throw a pair of dice till doublet appears if A starts the game find Probability of winning C  
 (a) 25/91  
 (b) 30/91  
 (c) 36/91  
 (d) None of these
44. If  $\log_a 4 = \frac{7}{2}$  find a  
 (a) 1.49  
 (b) 1.29  
 (c) 1.19  
 (d) None of these
45. If x and y are related to  $5x+8y-9=0$  and  $QD_x$  is computed as 40 the variance of  $(2x+9)$  is  
 (a) 14,400  
 (b) 7.200  
 (c) 3.600  
 (d) None of these
46. If 10 is added to all the observations C/V become 10%. If 10 is deducted from all the observation C/V becomes 36% find C/V if 5 is added to all the observation.  
 (a) 12.20%  
 (b) 14.89%  
 (c) 15.04%  
 (d) None of these

47. In a manufacturing unit if 2.50% items produced are defective, the probability out of 300 items only 2 are defective is
- 15.01%
  - 5.06%
  - 1.56%
  - None of these
48. If the word COMBINATION is written in different ways find Probability all vowels are not written in the starting of word
- $\frac{1}{462}$
  - $\frac{461}{462}$
  - $\frac{3}{462}$
  - None of these
49. The Cost of producing 400 item is 2300 and cost of producing 900 item is 3800, the cost of producing 1500 items is
- 4580
  - 5160
  - 5740
  - None of these
50. In a normally distributed factory with 20,000 employees if 15% employees draw less than ₹ 20,000 and SD is computed as 6000 find average salary ( $z = 1.04$  at 35% Probability)
- 13,760
  - 26,240
  - 20,000
  - None of these
51. If 4<sup>th</sup> central moment in poison distribution is computed as 243 the C/V is computed as
- 33.33 %
  - 52.17%
  - 46.80%
  - None of these
52. A plant was depreciated @15% for first 4 years @ 20% for next 3 years and @25% for another 3 years. If written down value of the plant after 10 year is ₹ 3,74,000 the cost of plant is
- Rs 33,16,820
  - Rs 31,90,870
  - Rs 11,57,900
  - None of these
53. X and Y are independent normal variable with mean 100 and 80 and SD are 4 & 3 respectively find probability distribution of (X and Y)
- 180 and 25
  - 180 and 5
  - 180 and 7
  - None of these



54. In the normally distributed factory with 30,000 employees if mean is computed as 40,000 and RD is computed as 27,000 how many workers draw salary Less than 13,000
- 342
  - 1368
  - 684
  - None of these
55. If the word PLAGIARISM is written in different ways, probability the place of vowel and place of consonants will remain the same
- $\frac{1}{210}$
  - $\frac{2}{105}$
  - $\frac{3}{70}$
  - None of these
- 56.
- |         | Red | Blue |
|---------|-----|------|
| Bag I   | 6   | 7    |
| Bag II  | 4   | 9    |
| Bag III | 8   | 15   |
- A pair of dice is thrown if doublet appears ball is drawn for Bag I, if at least 10 appears the ball is drawn from Bag II, find ball is drawn from Bag III and is found red
- $\frac{52}{207}$
  - $\frac{57}{135}$
  - $\frac{63}{135}$
  - None of these
57. While computing Coefficient of Co-relation between the 2 variables of 10 items is computed as .70 while the difference is 2 rank is wrongly taken as 7 instead of 6. If r is computed as .70 the actual Co-efficient of Co-relation is
- .78
  - .22
  - .63
  - None of these
58. If a packet containing dozen of glasses is dropped which of the following can not be ratio of broken glasses to the unbroken glasses
- 3:1
  - 6:1
  - 4:2
  - None of these
59. If a, b, c are the  $T_p$ ,  $T_q$  and  $T_r$  Terms of the GP, the value  $a^{q-r} b^{r-p} c^{p-q}$  is
- 0
  - 1
  - 2

- (d) None of these
60. A theoretical probability distribution.
- (a) does not exist
  - (b) Exists only in theory
  - (c) exists in real life
  - (d) both (b) and (c)
61. For a normal distribution with mean as 500 and SD as 120, what is the value of  $k$  so that the interval  $[500, k]$  covers 40.32 % area of the normal curve? Given  $z = 1.30$  at  $p = .4032$
- (a) 740
  - (b) 750
  - (c) 656
  - (d) None of these
62. Reaction in some medicine follow
- (a) Normal Distribution
  - (b) Poisson's Distribution
  - (c) Binomial Distribution
  - (d) None of these
63. The regression coefficients are zero if  $r$  is equal to
- (a) 0
  - (b) -1
  - (c) 1
  - (d) None of these
64. \_\_\_\_\_ cannot be treated algebraically
- (a) Mode
  - (b) Mean
  - (c) Median
  - (d) None of these
65. Coefficient of variation is a relative measure of
- (a) Dispersion
  - (b) Range
  - (c) Deviation
  - (d) None of these
66. Computation of deviation is
- (a) Relative comparison
  - (b) Absolute Comparison
  - (c) Both (a) and (b)
  - (d) None of these
67. An Ogive curve can be prepared in \_\_\_\_\_ different ways
- (a) 2
  - (b) 3
  - (c) 4
  - (d) None of these
68. The horizontal Bar graph is used for

- (a) comparing the attributes  
(b) comparing the variables  
(c) Finding relation in 2 variables  
(d) none of these
69. If 6 boys and 5 girls are made to sit in a circle find Probability all the girls are not together
- (a)  $\frac{41}{42}$   
(b)  $\frac{6}{11}$   
(c)  $\frac{1}{42}$   
(d) none of these
70. A and B stand in a queue with 6 more persons find probability exactly 3 persons are between A and B in the queue
- (a)  $\frac{1}{11}$   
(b)  $\frac{1}{9}$   
(c)  $\frac{1}{7}$   
(d) none of these
71. In an AP if 8<sup>th</sup> term is 15 find the sum first 15 terms
- (a) 225  
(b) 540  
(c) 390  
(d) None of these
72. If 12 is added to all the observations the C/V becomes 15% and it becomes 30% if 12 is deducted from all the observations. The present C/V is
- (a) 20%  
(b) 18%  
(c) 24%  
(d) none of these
73. If X and Y are related to  $4x + 5y - 9 = 0$  and  $MD_X$  is 8 compute  $Variance_{(5y-7)}$
- (a) 40  
(b) 320  
(c) 1600  
(d) none of the above
74. In Normal distribution  $(\mu - 3\sigma)$  covers approximately
- (a) .4987  
(b) .9974  
(c) .4772  
(d) none of the above

75. If the word ANNUITY is written in different ways find probability all the vowels and all the consonants are not together

(a)  $\frac{2}{35}$

(b)  $\frac{33}{35}$

(c)  $\frac{5}{42}$

(d) none of these

76. Find ratio of the Standard Deviation in X and Y

X: 101    102    103    104 -----150

Y: 201    202    203    204 -----250

(a) 1:1

(b) 2:5

(c) 3:4

(d) none of these

77. If  $P(A) = p$  and  $P(B) = q$  the

(a)  $P(A/B) > p/q$

(b)  $P(A/B) < p/q$

(c)  $P(A/B) = p/q$

(d) (b) and (c) both

78. An experiment succeeds twice as often as it fails. What is the probability out of 5 trials in majority of the cases it will succeed.

(a)  $\frac{33}{81}$

(b)  $\frac{46}{81}$

(c)  $\frac{64}{81}$

(d)  $\frac{25}{81}$

79. The value of  $4 \log \frac{8}{25} - 3 \log \frac{16}{125} - \log 5$  is

(a) 0

(b) 1

(c) 2

(d) None of the these

80. Modesty in a nice person and sweetness in sweet are examples of

(a) quantitative data

(b) qualitative data

(c) variable

(d) attribute

81. The rates of return on three securities are 150% 200% and 240% the average profit is

(a) 193.42%

(b) 196.67%

(c) 199.87%

- (d) none of these
82. In an AP if ratio of  $t_7$  and  $t_{10}$  is 5:7 what should be the ratio in  $t_8$  and  $t_{11}$
- (a) 13:16  
(b) 17:23  
(c) 14:17  
(d) none of these
83. A loan of Rs 5,00,000 was repaid in 50,000 annually @ 5% find the number of instalments
- (a) 13 years  
(b) 12 years  
(c) 14 years  
(d) none of these
84. If the word GOOGLE is written in dictionary find the rank of the word dictionary
- (a) 88  
(b) 194  
(c) 172  
(d) none of these
85. How many straight lines can be formed with 10 points if 5 are collinear
- (a) 35  
(b) 37  
(c) 36  
(d) none of these
86. In CA Foundation a candidate has to pass in each of four papers in how many different ways he can be failed
- (a) 18  
(b) 4  
(c) 15  
(d) none of these
87. In how many ways 4 letters can be selected out of the word COMMERCIAL
- (a) 210  
(b) 113  
(c) 197  
(d) none of these
88. If  $\alpha$  and  $\beta$  are the roots of equation  $x^2-5x+6=0$  then the equation whose roots are  $(\alpha^2+\beta)$  and  $(\alpha+\beta^2)$
- (a)  $x^2-9x+99=0$   
(b)  $x^2-18x+90=0$

(c)  $x^2 - 18x + 77 = 0$

(d) none of these

89. A committee is formed out of 4 gents and 5 ladies in which number of ladies are at least double to the gents provided 2 gents are required to be taken

(a) 45

(b) 36

(c) 28

(d) none of these

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

(a)  $\pm 4$ (b)  $\pm 8\sqrt{3}$ (c)  $\pm 4\sqrt{3}$ 

(d) none of these

91. The coefficient of variation of first 250 natural numbers is

(a) 58.10

(b) 56.90

(c) 57.50

(d) none of these

92. 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

93. 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

94. 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

95. 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

96. Measures of dispersions are called averages of the -----order

(a) 1<sup>st</sup>

(b) 2<sup>nd</sup>

(c) 3<sup>rd</sup>

(d) none of the above

97. 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

98. 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

99. 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

100. If in a symmetrical binomial distribution. The C/V is computed as 5%. Find the number of trials.

(a) 100

(b) 200

(c) 400

(d) None of these

**SPACE FOR ROUGH WORK**