

M.K.G CA EDUCATION

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TEST-1

QUESTION BOOKLET CODE: MKG

QUESTION PAPER BOOKLET NO. 1072023

SET-A

ROLL NO.

CA FOUNDATION

(23-07-2023 3:00 P.M. TO 5:00 P.M)

Business Mathematics and Logical Reasoning & Statistics

CHAPTERS

1. Ratio, proportion, Indices and Logarithmic
2. Permutation and Combination
3. Time value of Money

Time allowed: 2 hours

Maximum Marks : 100

Instructions:

1. Answer to be given in OMR sheet
 2. Negative marking applies
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01. $\log_2 \sqrt[2]{512} : \log_3 \sqrt[2]{324}$ is equal to

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

02. 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

03. 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

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

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

05. 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

06. 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

07. 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

08. 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

09. 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
10. A polygon has 44 diagonals the number of sides are
- a) 8
 - b) 9
 - c) 10
 - d) None of these
11. Find the value of x if ${}^{10}C_3 + 2 {}^{10}C_4 + {}^{10}C_5 = x {}^{10}C_5$
- a) 10
 - b) 12
 - c) 14
 - d) None of these
12. Find fort-nightly saving If Rs 5,80,000 is required after a period of 24 months @ 6% pa
- a) 11888
 - b) 12904
 - c) 11388
 - d) None of these
13. Find issue price of 10% bond of Rs 2000 redeemable after 7 years at 5% premium if opportunity cost is 15% p.a.
- a) 1709
 - b) 1621
 - c) 1591
 - d) None of these
14. 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

15. 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
16. 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
17. 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
18. 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
19. 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

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

- a) 127
- b) 113
- c) 119
- d) None of these

21. 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

22. In how many ways at least 2 friends out of 10 can be invited

- a) 1013
- b) 975
- c) 1024
- d) None of these

23. 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

24. 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

25. 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

26. 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
- Rs 6,73,959
 - Rs 6,90,898
 - Rs 7,28,976
 - None of these
27. The difference in simple interest and compound interest to be compounded quarterly @ 10% for 4 years is Rs 22,000 find the investment
- Rs 2,76,560
 - Rs 2,54,350
 - Rs 2,60,355
 - None of these
28. If $\log_2 X + \log_4 X + \log_{32} X = \frac{17}{10}$ value of x
- 8
 - 5
 - 2
 - None of these
29. 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
- xyz
 - $\frac{-1}{yz}$
 - $\frac{1}{xyz}$
 - $\frac{1}{x+y+z}$
30. $\log_4 X + \log_{16} X + \log_{64} X + \log_{256} X = \frac{25}{12}$ The value of X is
- 64
 - 4
 - 16
 - 2

- 31.** 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
- 32.** 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
- 33.** 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
- 34.** 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
- 35.** The effective rate of interest if nominal rate is 24% compounded monthly
- a) 24%
 - b) 26.82%
 - (c) 25.28%
 - d) 24.24%

36. 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%
37. 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
38. 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
39. $\log 144$ 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
40. 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

41. $15(2p^2 - q^2) = 7pq$ while p and q are positive find ratio of $p:q$
- a) 5:6
 - b) 5:7
 - c) 3:5
 - d) 8:3
42. 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
43. Find amount receivable after 11 years if Rs 40,000 quarterly is invested @ 11% pa
- a) 35 78 905
 - b) Rs 3344201
 - c) 1760000
 - d) None of these
44. 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
- a) 12.09%
 - b) 11.08%
 - c) 10.08%
 - d) None of these
45. Find Amount after 6 years 3 months if Rs 45 lacs is invested @ 10%pa to be compounded quarterly
- a) Rs 83 42 748
 - b) Rs 8243780
 - c) Rs 76 89 760
 - d) None of these
46. 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.
- a) 341600
 - b) Rs 381250
 - c) Rs 356670
 - d) None of these

47. 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?
- 3 : 3 : 10
 - 10 : 11 : 20
 - 23 : 33 : 60
 - Cannot be determined
48. How many odd numbers of four digit can be formed with digit 0, 1, 2, 3, 4, 7 and 8
- 150
 - 300
 - 120
 - 210
49. ${}^n C_p + 2^n C_{p-1} + {}^n C_{p-2}$
- ${}^n C_p$
 - ${}^{n+2} C_p$
 - ${}^{n+1} C_{p+1}$
 - ${}^{n+2} C_{p+1}$
50. The ratio of two numbers are 3:4. The difference of their square is 28 Greater no. is:
- 8
 - 12
 - 24
 - 64
51. 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
- 19
 - 20
 - 23
 - 27
52. If $a = \sqrt{\frac{7+4\sqrt{3}}{7-4\sqrt{3}}}$ then find the value of $[a(a - 14)]^2$
- 1
 - 2
 - 1
 - None of these

53. 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

54. 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

55. 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

56. 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

57. 10 persons are made to sit in a circle find in how many ways. neighbours are never together

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

58. 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
59. 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
60. An amount becomes 4 times at simple interest in just 30 years find how much time it takes in becoming 7 times
- a) 60 years
 - b) 45 years
 - c) 72 years
 - d) None of these
61. Find issue price of 11% Bond of ₹ 800 redeemable after 8 years at a premium of 12% if opportunity cost is @ 14%
- a) 732.90
 - b) 689.80
 - c) 722.30
 - d) None of these
62. The company had declared dividend @ 50 per shares 4 years back with a growth of 8% if cost of equity is 20% find Market price of share is
- a) Rs 705
 - b) Rs 567
 - c) Rs 604.
 - d) None of these
63. Find PV of an annuity of ₹ 10,000 pm for 61 months receivable on advance basis @ 9% pa
- a) 471733
 - b) 481733
 - c) 491733
 - d) None of these
64. An amount of Rs 45 lacs repayable after 9 years @ 11% compounded quarterly is preponed to 5 years the amount repayable shall be
- a) 2346651
 - b) 3152096
 - c) 2746216
 - d) None of these

65. Repayment of loan is
- Loan \times discounting factor
 - Loan \times compounding factor
 - loan \div discounting factor
 - None of these
66. Future Value of annuity is
- Periodical investment \times compounding factor
 - Periodical investment \times discounting factor
 - Periodical Investment \div compounding factor
 - None of these
67. A house was purchased by paying Rs 4,00,000 as down payment and 84 EMIs of Rs 23,000 each if opportunity cost is 9%pa what is the cost price of house.
- 14,29,540
 - 18,29,540
 - 10,29,540
 - None of these
68. The plant costing Rs 76,00,000 was purchased 9 years back and was depreciated on diminishing balance method If the wdv of plant is Rs 34,89,000 the average rate of depreciation is
- 8.10%
 - 9.67%
 - 8.29%
 - None of these
69. The salvage value of plant is Rs 23,00,000 which was purchased for Rs 54,00,000 and was depreciated @ 15% what is the age of plant
- 5 years 7 months
 - 5 years 3 months
 - 5 years 9 months
 - None of these
70. The difference in simple interest and compound interest Compounded qrtly for 5 years @ 11% pa is Rs 4,89,000 the amount of investment is
- 2869276
 - 362095
 - 2897565
 - None of these
71. How many code words are possible with three distinct alphabets followed by 4 digits between 1 to 9
- 47174400
 - 36789670
 - 36,28,800
 - None of these

72. Show that $\left(x^{\frac{b+c}{c-a}}\right)^{\frac{1}{a-b}} \times \left(x^{\frac{c+a}{a-b}}\right)^{\frac{1}{b-c}} \times \left(x^{\frac{a+b}{b-c}}\right)^{\frac{1}{c-a}}$ reduces to

- a) 1
- b) 3
- c) -1
- d) None of these

73. 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

74. 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

75. Find Present Value of advance annuity of ₹ 15000 per month for next 4 yeras @ 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

76. 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

77. 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

78. 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

79. Find sum of all 5 digit numbers formed with 3 3 3 5 6
- 8,88,880
 - 7.78.899
 - 6,76,980
 - None of these
80. 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.
- 61650
 - 60240
 - Incomplete data
 - None of these
81. An amount becomes triple in 10 years if compounded quarterly. Find rate of interest
- 6.98%
 - 7.56%
 - 8.32 %
 - None of these
82. 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
83. Find semi quarterly installment if a loan of Rs 65 lakh is repayable in 6 years @ 10% pa
- Rs 1,90,800
 - Rs 1,80,900
 - Rs 1,12,900
 - none of these
84. Find square root of $13 - \sqrt{168}$
- $\sqrt{7} - \sqrt{6}$
 - $\sqrt{8} + \sqrt{5}$
 - $\sqrt{9} + 2$
 - None of these
85. If the word BUDGET is written in dictionary the rank of word is
- 98th
 - 99th
 - 102nd
 - None of these

86. 7 persons A B C D E F and G are to be seated in a circle, in how many ways can this be done if A must always have B or C on his right and B must have either C or D on his right
- 72
 - 18
 - 21
 - None of these
87. Find the number of arrangements of 6 things taken out of 13 in which two particular things must always be included.
- 237600
 - 243900
 - 324600
 - None of these
88. A polygon has 90 diagonals, the number of sides are
- 15
 - 12
 - 18
 - None of these
89. A house is purchased on EMI of Rs 40,000 for next 12 years and an amount of RS 15 lakh after the completion of installments, the cost of house is if rate of interest is @ 9% p. a.
- 40,26,290
 - 50,14,840
 - 45,14,850
 - None of these
90. Find fortnightly installment if a loan of ₹ 35 lakh is repayable in 6 years @ 9% p.a.
- Rs 40700
 - Rs 31,500
 - Rs36.900
 - None of these
91. Find issue price of 12% Bond of ₹ 1000, redeemed after 9 years at 8% premium if market Rate is 15% p.a.
- Rs 880
 - Rs 910
 - Rs 930
 - None of these
92. 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.
- Rs 11.33,333
 - Rs 22,66,667
 - Rs 23.87.667
 - None of these

93. 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
94. ${}^{(m+n)}P_4 = 840$ and ${}^{(m-n)}P_4 = 120$ find m
- a) 6
 - b) 7
 - c) 8
 - d) None of these
95. 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
96. If $\log_a 4 = \frac{7}{2}$ find a
- a) 1.49
 - b) 1.29
 - c) 1.19
 - d) None of these
97. 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
98. How many straight lines can be formed with 10 points if 5 are collinear
- a) 35
 - b) 37
 - c) 36
 - d) none of these
99. 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
100. In how many ways 4 letters can be selected out of the word COMMERCIAL
- a) 210
 - b) 113
 - c) 197
 - d) none of these

SPACE FOR ROUGH WORK