

# M.K.G CA EDUCATION

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## MATH ASSIGNMENT NO. 10

Maximum Marks: - 100

Time: 2 Hours

1. If  $a : b = 3 : 7$ , then find the value of  $3a+2b : 4a+5b = ?$
2. If  $\log_a \sqrt{3} = \frac{1}{6}$ , find the value of  $a$ :
3. 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 ration to  $2 : 3$  ?
4. The rational root of the equation  $0 = 2p^3 - p^2 - 4p + 2$  is:
5. If  $2x^2 - (a + 6)2x + 12a - 0$ , then the roots are:
6. Solving equation  $m + \sqrt{m} = \frac{6}{25}$ , the value of  $m$  works out to:
7. Solve for  $x$  of the Inequalities  $2 \leq \left| \frac{3x - 2}{5} \right| \leq 5$
8. Find the present value of ₹ 1,00,000 to be required after 5 years if the interest rate be 9%. Given that  $1.09^5 = 1.5386$ .
9. ₹ 2,500 is paid every year for 10 years to pay off a loan. What is the loan amount if interest rate be 14% per annum compounded annually?
10. An amount is lent at a nominal rate of 4.5% per annum compounded quarterly. What would be the gain in rupees over when compounded annually?
11. What sum of money will produce ₹ 42,800 as an interest in 3 years and 3 months at 2.5% p.a. simple interest
12. Find Present value of an annuity receivable in 15 monthly installments of ₹ 30,000 starting from today @ 9% p.a.
13. A fruit basket contains 7 apples, 6 bananas, and 4 mangoes. How many selections of 3 fruit can be made so that all 3 are apples?
14. Out of 7 boys and 4 girls a team of a debate club of 5 is to be chosen. The number of teams such that each team includes atleast one girls is:

15. If  ${}^n P_4 = 20 \cdot {}^n P_2$  where  $p$  denotes the number of permutations  $n =$
16. Three numbers is G.P. with their Sum 130 and their product 27,000 are:
17. Two finite set respectively  $x$  and  $y$  number of elements. The total numbers of subsets of the first is 56 more than the total number of subset of the second. The value of  $x$  and  $y$  respectively.
18. The number of items in the set A is 40; in the set B is 32; in the set C is 50; in both A and B is 4, in both A and C is 5; in both B and C is 7 in all the sets 2. How many are in only one set?
19. The inverse function  $f^{-1}$  of  $f(y) = 3y$  is
20.  $\int x \cdot e^x dx$  is equal
21.  $\int e^x(x \log x + 1) x^{-1} dx$  is equal to
22. If  $y = x(x-1)(x-2)$  then  $\frac{dy}{dx}$  is:
23. Find the missing value in the series 0, 2, 3, 6, 10, 17, 28, ?, 75.
24. Find the missing value in  $\frac{3}{8}, \frac{8}{19}, \frac{18}{41}, ?, \frac{78}{173}$
25. Find the odd man out of the following 6, 9, 15, 21, 24, 26, 30.
26. If **HEALTH** is written as **IFBMUL**, then how will **NORTH** be written in that code?
27. Find the wrong term in: G4T, J10R, M2OP, P43N, S90L
28. Find the next term: 105, 138, 111, 101, ?
29. One day, Ram Left home and cycles 10km southward, turned right and cycled 5 km and turned right and cycled 10 km and turned left and cycled 10 km. How many kilometers will he have to cycle to reach his home straight?
30. A man is facing west he turns 45 degrees in the clockwise direction and then another 180 degrees in the same direction and then 270 degrees in the anticlockwise direction. Which direction is he facing now?
31. A man can walk be having **LONG**, **MEDIUM** and **SHORT** step. He can cover 60 meters by 100 long steps, 100 meters by 200 medium steps and 80 meters by 5000 long steps. Then he turns left and walk be taking 6000 medium steps. He then turns right and walk by taking 2500 short steps. How far (in meters) is he away from his starting point?
32. Five girls G, H, I, J, K are sitting in a row facing south not necessarily in the same order H is sitting between G and K, I is immediate right to K, J is immediate left to G. who is the centre
33. Eight friends I, J, K, L, M, N, O and P are sitting in a circle facing the centre. J is sitting between O and L; is third to the left of J and second to the right of I; K is sitting between I and O; J & M are not sitting opposite to each other who is exactly in the middle of K & P
34. Point out a Lady Sohil said she is the daughter of a woman, who is the mother of the husband of my mother. Who is the lady to Sohil?

35. Pointing towards a person, A man said to woman, "His mother is the only daughter of your father". How is the woman related to that person?
36. Vicky introduces John as the son of the only brother of his father's wife How is Vicky related to John?
37. A man said to a lady "your mother's husband's sister is my Aunt. "How is the man related to the lady?
38. Pointing to a lady, A said, "that woman is my nephew's maternal grandmother". How is that woman related to A's sister who has no sister who has no sister?
39. Pointing out to a lady, Sahil said, "she is the daughter of the woman who is the mother of the husband of my mother". Who is the lady to Sahil?
40. The average of salaries in a factory is ₹ 47,000. The Statement that the average salary ₹ 47,000 is \_\_\_\_\_
41. Given the weights for the numbers 1, 2, 3...n are respectively  $1^2, 2^2, 3^2, \dots, n^2$  then weighted HM is \_\_\_\_\_.
42. The harmonic mean A and B is  $\frac{1}{3}$  and harmonic mean of C and D is  $\frac{1}{5}$ . Find the harmonic mean of A, B, C & D is
43. A fire engine rushes to a place of fire accident with a speed of 110 kmph and after the completion of operation returned to the base at a speed of 35 kmph. The average speed per hour in per-direction is obtained as \_\_\_\_\_ speeds.
44. If the AM and HM of two numbers are 6 and 9 respectively, then GM is
45. When 2 unbiased dice are thrown what is the probability of getting the sum which is a multiple of 3 or 4
46. When 3 dice are rolled simultaneously the probability of a number on the third die is greater than the sum of the numbers on two dice
47. For a Poisson distributed variable X, we have  $P(X = 7) = 8 P(X = 9)$ , the mean of the distribution is:
48. The quartile deviation of a normal distribution with mean 10 and standard deviation 4 is \_\_\_\_\_
49. If the parameter of Poisson distribution is m and  $(\text{Mean} + \text{S.D.}) = \frac{6}{25}$  then find m:
50. In Lespeyre's index number is 110 and Fisher's ideal index number is 109. Then Paasche's index number is
51. Find the value of  $\frac{3t^{-1}}{t^{-1/3}}$
52. If  $\log_a(ab) = x$ , then  $\log_b(ab)$  is
53. In a certain business A and B received profit in a certain ratio B and C received profits in a certain ratio B and C received profits in the same ratio. If A gets ₹ 1600 and C gets ₹ 2500 then how much does B get?
54. The ratio of two quantities is 15 : 17. If the consequent of its inverse ratio is 15, then the antecedent is;
55. 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?
56. The value of P for which the difference the root of equation  $x^2 + px + 8 = 0$  is  $< 2$
57. If the quadratic equation  $x^2 + px + q = 0$  and  $x^2 + qx + p = 0$  have a common root then  $p + q = ?$

58. The harmonic Mean of the roots of the equation  $(5 + \sqrt{2})x + 8 + 2\sqrt{5} = 0$  is
59. The common region in the graph of the inequalities  $x + y \leq 4, x - y \leq 4, x \geq 2$  is
60. A certain sum amounted to ₹ 575 at 5% in a time in which ₹ 750 amounted to ₹ 840 at 4%. If the rate of interest is simple, find the sum-
61. Find the amount of compound interest, if an amount of ₹ 50,000 is deposited in a bank for one year at the rate of 8% per annum compounded semiannually.
62. The population of a town increase by 2% of the population at the beginning of the year. The number of year by which the total increases in population would be 40% is:
63. Two equal amounts of money are deposited in two banks each at 15% p.a. for 3.5 year in the bank and for 5 years in the either of the two bank. The difference between the interest amount from the bank in ₹ 144. Find the sum
64. The Simple interest on sum of certain money @ 4% p.a. for 2 years is ₹ 80. Find the CI on the same sum for the same period.
65. Assuming that the discount rate is 7% p.a. how much would pay to receive ₹ 200 growing at 5% annually for ever?
66. 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 –
67. A sum of money is lent at C.I. Rate 20% p.a. 2 years. It would fetch ₹ 482 more if the interest is compounded half yearly. The sum is:
68. ₹ 800 is invested at the end of each month is an account paying interest 5% per year compounded monthly. What is the future value of this after three months of making 10<sup>th</sup> Payment?
69. 'n' locks and 'n' corresponding keys are available but the actual combination is not known, The maximum number if trails that are needed to assign the keys to the corresponding lock is
70. There are ten flights operating between city A and city B. The number of ways in which a person can travel from city A to city B and return by different flight is
71. How many odd numbers of four digit can be formed with digit 0, 1, 2, 3, 4, 7 and 8?
72. In how many different ways can the letter of the word 'DETAIL' be arranged in such a way that the vowels occupy only the odd numbered positions
73.  ${}^n C_p + 2 {}^n C_{p-1} + {}^n C_{p-2}$ ?
74. The number of integers from 1 to 100 which are neither divisible by 3 nor 5 nor 7 is
75. The cost function of production is given by  $C(x) = \frac{x^3}{2} - 15x^2 + 36x$  where x, denotes the number of item produced. The level of output for which marginal cost is minimum and the level of output for which the average cost is minimum are required to be computed

76. Find the missing term P3C, R5F, T8I, V12L, \_\_\_\_\_
77. In a certain code Language BEAT is written as YVZG, then what will be code for MILD?
78. In a certain code RIPPLE is written as 613382, and LIFE is written as 8192. How will RIFFLE be written in that code?
79. A man is facing west. He turns  $45^\circ$  in the same direction and then  $270^\circ$  in the anti-clockwise direction. Which is the facing now?
80. Ms. N walks 19km towards North from there she walks 6 km towards South. Then she walks 3 km towards East. How far and in which direction is she with reference to her starting point?
81. A, B, C and D are playing cards, A and B are partners. D faces towards North. If A faces west, then who faces south?
82. A is seated between D and F at a round table. C is seated opposite to D. E is round adjacent to D. who sits opposite to B?
83. Four Indians, A, B, C and D and four Chinese E, F, G and H are sitting in a circle around a table facing the each other in a conference. No two Indians or Chinese are sitting side by side, C who is sitting between G and E is facing D, F is between D and A and facing G, H is to the left of B who is sitting left of A?
84. Five friends A, B, C, D and E are sitting on a bench. A is sitting next to B; C is sitting next to D, D is not sitting with E: E is at the left end of bench. C is on second position from the right; A is on the right side of B who is the right side of E. A and C are sitting together. Who are sitting in the extreme sides of bench?
85. 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
86. The HM of 2 numbers is computed as 4 and  $2A + G^2 = 27$  where A is AM and G is GM find the numbers
87. If A and B are two events of a random experiment and Probability of occurrence of A is  $\frac{1}{5}$  and probability of occurrence of B provided A had happened is  $\frac{1}{10}$ , the probability of non-occurrence of at least one of the two events is
88. An urn I contains 2 white and 3 black balls and urn II contains 4 white and 6 black balls 2 balls are shifted from urn I to urn II and subsequently a ball is drawn from urn II find Probability it is not white
89. 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 compute correct co efficient of co relation if computed  $r = .64$
90. A company wishes to replace a plant costing ₹ 45 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.
91. if the roots of the equation  $12x^2 + kx + 5 = 0$  are in the ratio of 3 : 2 find the value of k.

92. The present age of man is 8 years more than thrice the sum of ages of his twin grandsons, after 8 years his age will be 10 years more than the twice of the sum of ages of twin grandsons. The age of a man when his grandsons were born was
93. If  $2a = 4b = 8c$  and  $abc = 288$  then find the value of  $\frac{1}{2a} + \frac{1}{4b} + \frac{1}{8c}$
94. The number of different factors can be formed with 1,05,600
95. for what value of X, the equation  $(\log_{\sqrt{x}}2)^2 = \log_x 2$  is true
96. If X, 12, Y and 27 are in regular proportion the value of X and Y are
97. integrate  $\int \left( \frac{1}{\log x} - \frac{1}{\log x^2} \right) dx$
98. The first, second and seventh term of an AP forms GP and common difference is 2 find the second term of the series
99. If S be the sum p be the product and R be the sum of reciprocals of n terms in GP then  $p^2 R^n$  is equal to
100. A person purchases 5 rupees worth of flowers from 10 different markets. To compute average number of flowers per rupee purchased from different market, the suitable average required is

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