M.K.G CA EDUCATION

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MATH ASSIGNMENT NO. 5

Maximum Marks: - 100 **Time: 2 Hours**

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01. On simple interest an amount becomes two and half times in 10 years after how much time it will become **(i)** three times **(ii)** 5 times and **(iii)** 8 times
02. An amount becomes double in 4 years if compounded quarterly after how much period it will become three times if compounded half yearly.
03. An amount becomes double in 6 years if compounded annually after how much time it will become i) 4 times ii) 8 times and iii) 16 times
04. Find issue price of 12% bond of Rs 1100 redeemable after 7 years at 10% premium if opportunity cost is 12.50% p.a.
05. The salvage value of 11 years old plant is Rs 8.90 lacs which was purchased for Rs 30 lacs. What is the average rate of depreciation if asset is depreciated at diminishing balance method
06. A plant costing Rs 40,00,000 will save Rs 12 lacs in first three years each and Rs 9.80 lacs in next three years each. Suggest whether plant is to be purchased if opportunity cost is 13% p.a.
07. Find EMI if Rs 45 lacs is repayable in 7 years @ 9% p.a.
08. A house was purchased by paying Rs 12 lacs as down payment and a monthly instalment of Rs 5600 for next 10 years. Find the cost of house if rate of interest is @ 9.60% pa
09. A plant costing Rs 50 lacs shall be replaced after 8 years when prices will be increased by 20%. Compute how much to be provided annually so that plant is replaced if scrap value of plant will be Rs 4,72,000. The rate of interest is @ 11% p.a.
10. If effective rate of interest is 11.20 % if compounded quarterly. What is the nominal rate of interest?
11. If $2^x = 4^y = 8^z$ and value of XYZ =288 find the value of $\frac{1}{2x} + \frac{1}{4y} + \frac{1}{8z}$
12. If $(4.8)^x = (0.48)^y = 1{,}000$ find the value of $\frac{1}{x} - \frac{1}{y}$
13. $\log(a^9) + \log a = 10$ find the value of a

14. $\frac{\log a}{y-z} = \frac{\log b}{z-x} = \frac{\log c}{x-y}$ find the value of abc
15. $\log_3[\log_4 \{\log_2 x\}] = 0$ find the value of x
16. Find the value of $[\log_5 (1+\frac{1}{5}) + \log_5 (1+\frac{1}{6}) +$----------$\log_5(1+\frac{1}{624})]$
17. if $X = 3 + 2\sqrt{2}$ find the value of $x^3 + \frac{1}{x^3}$
18. If roots of the equation $12x^2 + kx + 5 = 0$ are in the ratio of $3 : 2$ find the positive value of K
19. If AM between roots of the equation is 8 and GM between the roots of equation is 5 Find equation
20. if the sides of equilateral triangles are shortened by 3 units 4 units and 5 units respectively and resultant triangle is right angled triangle. find the sides of equilateral triangle
21. If ${}^{n}p_r = {}^{n}p_{r+1}$ and ${}^{n}c_r = {}^{n}c_{r-1}$ Find the value of n
22. In an examination consisting 6 questions in Part A and 5 question in part B in how many ways at least a question from each part can be solved.
23. Six persons A B C D E and F are made to sit in a circle. In how many ways it can be done if A always must have either B or C on his right and B always must have C or D on his right side
24. Find the number of arrangements of 5 things taken out of 12 things in which two particular things must always be included
25. A polygon has 44 diagonals find the sides of polygon.
26. In how many ways the word COMMERCE can be written if no two vowels are together
27. In a group of 70 people ,45 speak Hindi 33 speak English and 10 speak neither Hindi nor English. Find how many can speak both Hindi and English
28. In a town of 20,000 families, it was revealed that 40% families buy Newspaper A ,20% buy Newspaper B and 10% buy newspaper C. 5% buys A and B 3% buy B and C and 4% buy A and C. if 4% buy all the three newspapers. Compute number of families buy only newspaper A
29. Out of 150 students, 45 passed in Accounts 30 in economics and 50 in maths. 30 in both accounts and maths 32 in both maths and Economics 35 in accounts and economics and 25 students pass in all the three subjects compute the students who has passed in at least one subject.
30. If $f(x) = x/\sqrt{1+x^2}$ and $g(x) = x/\sqrt{1-x^2}$ find fog and gof
31. If set $A = \{1, 2, 3, 4, 5\}$ $B = \{2, 4\}$ and $C = \{1, 3, 5\}$ find the value of $(A-C)XB$
32. For a group of 200 persons 100 are interested in music ,70 in photography and 40 in swimming. Further more 40 are interested in both music and photography ,30 in music and swimming 20 in photography and swimming and 10 in all the three. How many are interested in photography but not in music and swimming.
33. if $f(x) = 10x-7$ find inverse of $f(x)$
34. The number of subsets of the word ALLAHABAD is

35. If f(x) = $\frac{(x-1)}{x}$ and g(x) = $\frac{1}{1-x}$ the value of fog is
36. $\int x^2 e^{3x} dx$
37. $\int \frac{x^3}{(x^2+1)^3} dx$
38. f(x) = ${}^{x}C_3$ find $f^1(1)$
39. $\int 2^{2x} 3^{2x} 5^x dx$
40. A certain ball when dropped to the ground rebounds 4/5 th of the height from which it falls. It is dropped from 100 mts find the total difference it covers before finally coming to rest
41. in an A P if ratio of $t_7:t_{10} = 5 : 7$ then ratio in $t_8:t_{11}$ will be
42. Find the sum of $1 + \frac{4}{5} + \frac{7}{5^2} + \frac{10}{5^3}$ + ---------- upto infinity
43. If G is GM in a and b then find the value of $\frac{1}{G^2-a^2} + \frac{1}{G^2-b^2}$
44. The product of (243), $(243)^{1/6}$, $(243)^{1/36}$---------- upto infinity is
45. In a GP if $t_5 = 3^{1/3}$ find the product of fist 9 terms.
46. If sum of 3 AMs between a and 22 is 42 find the value of a
47. In an AP if t_8 =15 find the sum of first 15 terms
48. If S be the sum P the product and R be the sum of reciprocals of terms in AP find the value of p^2R^n
49. In how many ways 10 persons can be made to sit in a circle such that 2neighbours are never together
50. Find sum of all 4 digit numbers formed with 0, 1, 2, 3 and 4
51. How many 4 digit numbers can be formed with the digits 3,4 5,6,7 and 8 between 3500 and 5400
52. If the word G O O G L E is written in dictionary how many words can be written before this word
53. In how many ways 4 letters can be selected out of the word COMMERCE
54. How many 4 digit numbers can be formed with 1, 1, 2, 2, 3, 4, 5.
55. In how many ways 8 balls can be put into 3 pots if a particular pot must have 3 balls
56. find the missing 7, 26, 124, 342, 1330, 2196, ------
57. Find the missing 1, 16, 81, 256, 625, 1296, ----------
58. find missing 2, 12, 36, 80, 150, 252, --------
59. find the odd one 64, 216, 512, 729, 1331, 3371, 8000
60. If REASON Is coded as 5 BELIEVED is coded as 7 How the GOVERNMENT is coded
61. In a certain code 467 means LEAVES ARE GREEN 485 means GREEN IS GOOD and 639 means THEY ARE PLAYING, which digit stands for LEAVE
62. complete the series 1, 4, 27, 256, 3125, ----------

63. Ram started from point X and walked straight 5 kms west then turned left and walked 2 kms straight and again turned left and walked 7 kms straight, in which direction is he from point X.
64. Anoop starts walking towards south after walking 15 meter he turns towards North reaches at a crossing after 30 meters he turns towards east and walks 10 meters. He then turns towards south and walks 5 meters. In which direction is he from the original position
65. Six persons A B C D E and F are seen in a group B is brother of D but D is not brother of B F is brother of B, C and A are married together. F is son of C but C is not mother of F. E is brother of A. The number of female members are
66. Six flats are on a floor in two rows facing North and South are allotted to P Q R S T and U. If Q gets a North facing flat not next to S. S and U get diagonally opposite flats. R next to U gets South facing flat while T gets north facing flat. Who has flat between Q and S.
67. Ram and Mohan are brothers, Shankar is Mohan's father. Chhaya is Shankar's sister. Priya is shankar's niece. Shubhra is Chhaya's grand daughter then Ram is Shubhra's
68. Find missing 28, 32, 23, 39, 14?
69. Find missing 13, 13, 65, 585, 7605, 129285?
70. Find missing 1, 8, 81, 1024, 15625?
71. The consumer price Index is increased from 130 to 970 from 1995 to 2015 while minimum wages is increased from Rs 7000 to Rs 43000. the real wages is
72. The co efficient of variation of first 250 Natural Number is
73. The value of money is reduced to 34.92% find the value of CPI and DA required to be paid
74. In a factory 2 % of items produced are defective, the probability out of 150 items packed only one will be defective is
75. In a normally distributed factory of 10000 workers with average salary of Rs 32000 if 25% workers draw less than 27500 The range of salary is
76. In a normally distributed factory with 8000 workers if two quartiles are computed as 16000 and 24,000 the range deviation will be
77. In a symmetrical Binomial distribution with 64 observations the Co efficient of variation is
78. If 5 is deducted from all the observations the Coefficient of variation is 10% and if 5 is added to all the observations the coefficient of variation is 6% the coefficient of variation of observations is
79. if x and y are related to $3x + 4y - 6 = 0$ the relation between x and y is
80. If P (A) =P and P(B) = q find the value of $P\left(\frac{A}{B}\right)$
81. If the word COMMERCIAL is written in different ways the Probability no two vowels are together is
82. If the observations are given in ratio which of the following central value is required to be computed

83. If Q.D of 40 observations is computed as 32 and Median is computed as 20 the co efficient of Quartile Deviation is:
84. The regression coefficient b_{xy} = 2.40 if $3x + 2u - 9 = 0$ and $3y - 4v + 8 = 0$ the regression coefficient b_{uv} is
85. If $2x - 8y + 6 = 0$ and $3x - 4y - 9 = 0$ find the Coefficient of co relation and the coefficient of alienation
86. A and B throw a pair of dice alternatively till the doublet appears If A starts the game find Probability of B loosing the game
87. An urn contains 4 Red and 5 black balls if two balls are drawn by X without replacement and he will Win Rs 20 on the draw of Red ball but will loose Rs 10 on the draw of black ball the Expected value of game is
88. In a class of two sections with 60 and 40 students the Arithmetic Mean of marks in mathematics is Computed as 40 and 50 while variance of both the sections are 25 and 16 respectively. The combined variance of both the sections is
89. While computing co variance of 10 pairs a pair (8, 6) is wrongly taken as (6,8) if computed mean of X, Y and covariance between them are 40, 50 and 60 respectively. The correct covariance (x and Y) is
90. The regression coefficient remains independent with change in _____ but gets affected with Change____.
91. If Standard deviation of x is computed as b the variance of $\left(\frac{x+a}{b}\right)$ is
92. Explain and name the part of table
93. The point of intersection of two ogive curves is
94. If 15 dates are selected at random, the probability of getting 2 Sundays is
95. An experiment succeeds twice as often as it fails. What is the probability out of 5 trials at least three will succeed?
96. In a normal distribution with parameters (50 and 16) find fourth moment
97. Consumer price index number for the year 1977 was 313 with 1960 as base year and was 96 for the year 1960. The average monthly wages in 1977 of the workers into factory be 160 their real wages is
98. The mean of normal distribution is 50 and 5 % of the values are greater than 60 the value of c/v is (z = 1.64 is 0.45)
99. P(A)= $\frac{1}{2}$ P(B) = $\frac{1}{3}$ and P(A∩B) = $\frac{1}{4}$ then value of P(A` ∩ B`) =
100. In a Binomial Distribution with 6 trials the probability of 3 and 4 successes is found to be .2457 and .0819 respectively the value of P is