

M.K.G CA EDUCATION

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MATH ASSIGNMENT NO. 4

Maximum Marks: - 100

Time: 2 Hours

1. 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
2. An amount becomes double in 4 years if compounded quarterly after how much period it will become three times if compounded half yearly.
3. 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
4. Find issue price of 12% bond of Rs 1100 redeemable after 7 years at 10% premium if opportunity cost is 12.5%
5. 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.
6. A plant costing Rs 40,00,000 will save Rs 12 lacs each in first three years and Rs 9.80 lacs in next three years. Suggest whether plant is to be purchased if opportunity cost is 13% pa
7. Find EMI if Rs 45 lacs is repayable in 7 years @ 9% pa
8. 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
9. A plant costing Rs 50 lacs shall be replaced after 8 years when prices will increase by 20%. Compute how much to be kept in Sinking fund annually so that plant is replaced if scrap value of plant will be Rs 4,72,000. The rate of interest is @ 11% pa
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 $[\log_5\left(\frac{1+1}{5}\right) + \log_5\left(\frac{1+1}{6}\right) + \dots + \log_5\left(\frac{1+1}{624}\right)]$
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 made right angles 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 $f(x) = \frac{x}{\sqrt{1+x^2}}$ and $g(x) = \frac{x}{\sqrt{1-x^2}}$ 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 $(A-C) \cap B$
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. $\int x^3 / (x^2 + 1)^3 dx$
38. $f(x) = {}^x C_3$ find $f'(1)$
39. $\int 2^{2x} 3^{2x} 5^x dx$
40. A certain ball when dropped to the ground rebounds $\frac{4}{5}$ 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 $1 + \frac{4}{5} + \frac{7}{5^2} + \frac{10}{5^3} + \dots$ 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 $(243), (243)^{1/6}, (243)^{1/36}, \dots$ upto infinity is
45. In a GP if $t_5 = 3^{1/3}$ find the product of first 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 $p^2 R^n$
49. How many 4 digit numbers can be formed out of 1, 1, 2, 3, 3 and 5.
50. In how many ways 10 persons can be made to sit in a circle such that 2 neighbours are never together
51. Find sum of all 4 digit numbers formed with 0,1,2,3 and 4
52. How many 4 digit numbers can be formed with the digits 3,4,5,6,7 and 8 between 3500 and 5400
53. If the word GOOGLE is written in dictionary how many words can be written before this word
54. In how many ways 4 letters can be selected out of the word COMMERCE
55. How many 4 digit numbers can be formed with 1, 1, 2, 2, 3, 4, 5.
56. In how many ways 8 balls can be put into 3 pots if a particular pot must have 3 balls
57. If $b_{xy} = 2.40$, $3x + 5u - 7 = 0$ and $5v + 4u - 8 = 0$ find b_{uv}
58. In a manufacturing unit if 1.50 % items produced are defective find Probability out of 400 items not more than three items are defective
59. If a 4 digit number is formed with 2,3,7, and 8 find probability number is divisible by 4
60. A and B stand in a queue with 6 more persons find probability exactly 3 persons are between them
61. In a group of 500 people 60 % are male and 30% are graduates. it is observed that 40% women are graduate if a person is selected and found graduate find probability, he is male

62. A pair of dice is thrown find probability of getting a total of at least 10 if doublet appears
63. 4 digit number is formed with 3,4,5,6,7 and 9 find probability number lies in between 4500 and 7300
64. In a normally distributed factory with average salary of ₹ 40,000 and QD is 8000. Find probability out of 5 persons selected three draw more than ₹ 76,000 as salary
65. Sum of mean and variance of 10 items are 3.6 Find mean and variance of distribution and also compute C/V
66. A speaks truth in 60% cases and B tells lies in 50% cases find probability both will contradict in stating some fact.
67. The value of money is decreased by 42% find DA to be increased
68. The value of money is decreased by 20% during last 4 years and salary is also increased by 20% compute whether any DA is required to be paid
69. Price Index is computed as 134% by Fisher's method and 142% by Pasche method compute Price Index by Dr Bowley method
70. While computing r_k of 10 observations the difference in 2 ranks is wrongly taken as 6 instead of 8 if computed r_k is .65 Compute correct co efficient of co relation .
71. If the word COMMERCE is written in different ways find probability no two vowels are together
72. If the variance of random variable is 23 find the variance of $2x + 10$
73. There are two urns, No I containing 6 red and 5 blue and Urn No. II contains 5 red and 6 blue a ball is shifted from urn I to urn II and subsequently a ball is drawn from urn II find Probability it is not Red
74. 8 identical balls are placed in 3 boxes find probability box I contains a) 3 balls b) 4 balls
75. If 10 is added to all the observation the C/V becomes 15% if 10 is subtracted from all the observations it becomes 30% find C/V
76. In an examination there are 5 questions to be solved with alternative choice find in how many ways at least one question can be solved
77. If x and y are related to $3x + 5y - 7 = 0$ Compute all the deviations in respect of X and Y if it is given that QD_x is 10.
78. While computing Standard deviation of 20 items an item 54 was wrongly taken as 45 If computed mean and Variance is 70 and 225 compute correct mean and variance
79. In a manufacturing units number of workers were reduced in the ratio of 20 : 17 but wages are increased from 11 : 18 find the increase /decrease in wage bill of manufacturing unit
80. if $\log_{12}24 = x$ $\log_{24}36 = y$ and $\log_{36}48 = Z$ Find the value of $XYZ + 1$
81. An amount of Rs 40 lacs was lent to A B C for 5 years 6 years and 7 years @ 10% pa if all repays equal amount on maturity find the amount lent to B

82. A manufacturing unit has two options either to buy a plant costing Rs 40 lacs which will yield Rs 12.50 lacs for next 6 years or to buy a plant costing Rs 50 lacs which will yield a net profit of Rs 12 lacs for next 7 years if rate of interest is 12% pa find which is the better option
83. If a^2 , b^2 and c^2 are in AP then $(b + c)$, $(c + a)$ and $(a + b)$ are in which series
84. If the sum of GP upto infinite terms is 2 and sum of their square to infinity is 50 find a and r
85. Define type of function $f(x) = 2^x$
86. In a group of 20 children 8 drinks tea but not coffee and 13 takes tea . Compute number of people who take coffee but not tea
87. Find present value if Rs 40,000 yearly is receivable for next 10 years starting from today @ 9.50% pa
88. The simple interest and compound interest in two years on certain amount is Rs 12,000 and 12,660 compute rates of interest and amount invested
89. An amount was invested @ 11% for 5 years if difference in simple interest and compound interest is Rs 3.78 lacs compute Investment
90. $4X - 5Y + 7 = 0$ and $6X - 8Y = 0$ are two regression lines compute co efficient of non-determination and co efficient of co relation
91. Complete the series 2, 12, 36, 80, 150 -----
92. 3, 6, 15, 42, 123-----
93. If BOMBAY is coded as MYMYMY how the KANPUR will be coded as
94. If cool is coded as 45 how the hot will be coded and in the same way how the word commerce will be coded
95. Find missing 1, 4, 27, 64, 3125,823543
96. A starts from a point and walks towards North for 6 KM and takes right and walks 8Kms. How far and in which direction he is from the starting point
97. Which of the following statement is true
- i) more the value of r less the degree of co relation
 - ii) value of money is always reciprocal to price index
 - iii) Circular test is extension of Time Reversal Test
 - iv) The sum of deviation from actual mean is always 0
 - v) For unequal intervals only median can be calculated
 - vi) Negative co relation means there is no relation between the variables
 - vii) Statistics only deal with quantitative values
 - viii) $(\text{Mean} \pm 3\sigma)$ covers 99.74% data
 - ix) $(\text{Mean} \pm \sigma)$ covers 68.26% data
 - x) b_{xy} , b_{yx} and r may have different mathematical sign

- xi) In a symmetrical distribution variance is minimum
- xii) QD is always $\frac{2}{3}$ of SD
- xiii) In an symmetrical series $AM > GM > HM$ (ALWAYS)
- xiv) C/V computes absolute variation
- xv) A G H are always in AM ratio
- xvi) Standard deviation is always less than Mean
- xvii) Median can be computed by OGIVE curve
- xviii) Histogram can be used to compute Mean
- xix) Binomial distribution is Bi modal distribution
- xx) Only Poisson distribution is uni-modal
- xxi) A table has 5 parts if yes name them also

98. $N=30 \sum xy = 100 \sum x = 25 \sum y = 30 \sum x^2 = 1144 \sum y^2 = 4300$ find co efficient of co relation

99. Find co efficient of co relation by rank differential method

X: 40,50,65,65,50,90

Y: 30,70,70,70,90,40

100. $b_{xy} = 1.70$ $r = .40$ find b_{yx}

**“BEST of
LUCK”**