M.K.G CA EDUCATION

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MATH ASSIGNMENT NO. 3

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

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01. How many triangles can be formed with 13 points out of which 5 are collinear also compute the number of lines with the given points.

02. How many 4 digit numbers can be formed with 2 3 4 5 6 and 8? how many are

   a) even

   b) Divisible by 4

   c) divisible by 5

   d) number greater than 6500

   e) number is less than 4300 and between 4300 and 6500

03. If the word CORPORATION is written in different ways find probability vowels always occupy even places

04. In How many ways 4 letters can be selected out of the word

   A) EXAMPLE

   B) ACCOUNTS

   C) EXAMINATION

   D) GOOGLE

   E) EXTENTION

   F) EXAMINATION

05. In how many ways 4 digits can be selected out of the digits 3, 3, 5, 5, 6, 6, 7 and 8.

06. How many 4 digit numbers can be formed by selecting 4 digits out of 2, 2, 3, 3, 4 and 5

07. How many 4 letters words can be formed out of EXTERIORS.

08. In how many ways 6 girls and 4 boys are made to sit in a circle if

a) all girls are not together

b) no two boys are together

c) three particular girls never sit together

d) two boys and three girls are always together

09. If the word EXTEMPORE is written in different ways find probability

a) word start with E and also end with E

b) word start with E but not end with E

c) all the vowels occupy odd places

d) Word starts with any vowel

e) Word starts with T and end with E

10. In a manufacturing unit if 1.50% items produced are defective find probability out of 300 items at most 2 items are defective and also find probability at least 1 item is defective

11. In a normally distributed factory with 12,000 workers with Mean salary 34,000 and standard deviation 10,000 find number of workers drawing

a) between 14000 and 54,000

b) less than Rs 4,000

c) Range of salary

d) both the quartiles

e) point of inflection and

f) co efficient of variation

12. In a normally distributed factory with 40,000 workers if 10,000 draw salary less than 20,000 and 10,000 draw more than 38,000 find mean salary and the co efficient of variation . Also compute QD and mean deviation

13. In a symmetrical Binomial Distribution with 324 trials find Mean, Variance, and C/V

14. In a Binomial distribution if difference between mean and variance of 5 trials is 1.8 find the direction of curve

15. In a annual calendar if 5 dates are selected find probability all are Sundays

16. Odds against A loosing the game is 3:7 and odds in favour of B winning the game is 5:9 find probability exactly one will win and find probability both will not loose

17. Bag I contains 5 Red and 6 white balls and Bag II contains 7 Red and 4 white ball

   a) a bag is selected at random and a ball is drawn find probability it is not Red

   b) a bag from each bag are drawn find probability both are not of same colour.

   c) two bags from each bag are drawn find probability all are Red

   d) a ball is shifted from bag 1 to bag 11 and subsequently a ball is drawn from bag ii find probability it is Red

   e) A ball is shifted from bag I to bag II and subsequently a ball is drawn from bag I find probability it is red

   f) A pair of dice is thrown if doublet ball is drawn from 1 or else from bag ii find Probability ball drawn is Red

18. A B and C are exhaustive events and $2P(A) = 3P(B) = 5P(C)$ Find respective probability of A B and C

19. If $P(A) = \frac{2}{5}$ $P(B) = \frac{3}{7}$ $P(A \cup B) = \frac{5}{7}$ Find

   a) Whether events are Mutually exclusive, Exhaustive or neither of two

   b) $P(A/B)$

   c) $P(B/A)$

   d) $P(A-B)$

   e) $P(B-A)$

   f) $P(A^c/B)$

   g) $P(B^c/A)$

   h) $P(A^c/B^c)$

i) P (Neither of Two)

20. A bag contains 5 Red and 6 white balls. Getting red ball will win Rs 25 while getting white ball will loose 15. Find expected value of game if three balls are drawn without replacement

21. A and B stand in a queue with 6 more persons find probability there are exactly

   a) 4 persons in between A and B

   b) 3 persons in between A and B

   c) All 6 are in between A and B

22. 8 balls are put into 3 boxes find probability exactly

   a) 3 balls are put in box 1

   b) 4 balls are put in box 1

23. 7 good bulbs are mixed with 3 fused bulbs find probability of getting at most two fused bulbs out of a single draw of 6 bulbs

24. The value of money is decreased by 32 % find the DA to be paid to employees

25. If the Price Index computed by Dr Bowley is 134 and by Fishers method it is 125 compute the price index computed by Lipsmeyer's and Pasche's method individually

26. If b_{xy} is computed as 2.90 and x and y are related to $3x + 5u - 9 = 0$ and $6y - 4v + 8 = 0$ the regression co efficient u on v shall be

27. if r_{xy} is computed as .89 and x and y are related to $3x - 4u + 7 = 0$ and 5y-4v-3=0 the co efficient of co relation in u and v is

28. While computing co efficient of co relation of 25 observations the P. E. is computed as .024 find the value of

   a) co efficient of co relation

   b) co efficient of determination

   c) co efficient of alienation   and

   d) value of standard error

29. While computing r_k of 10 observations the difference in two ranks is wrongly taken as 7 instead of 6 if computed co efficient of co relation is .56 compute correct value of co efficient of co relation

30. Given the two regression lines $5x + 9y - 8 = 0$ and $8x + 4y + 6 = 0$ compute

   a) means of x and y

   b) co efficient of determination

   c) sum of the regression coefficients

31. If x and y are related to $4x + 7y + 9 = 0$ and RD$_X$ is computed as 14 compute

   a) RD, SD, MD and QD of X and Y

   b) variance of $(3x - 7)$

   c) variance of $(4Y - 9)$

32. In a manufacturing unit the number of workers are reduced in the ratio of 7:5 but wages is increased in the ratio of 4:7 Find the ratio of proposed wage bill to the existing wage bill

33. A trader mixes two type of Rice costing Rs 72 per Kg and Rs 45 per kg and sells the mixture @ Rs 60 per kg and earns 12% profit on cost. In what ratios both rice are mixed

34. Find square root of

   a) $5 + \sqrt{224}$

   b) $11 - \sqrt{112}$

   c) $17 - \sqrt{288}$

35. if $3^x = 5^y = 225^z$ Find the value of x, y and z respectively

36. Find EQI if a loan of Rs 45 lacs is repayable in 10 Years @ 9% p.a.

37. An amount of Rs 45 lacs is receivable after 7 years find the amount receivable if it is

   a) pre poned to 5 years

   b) post poned to 8 years

   if rate of interest is 11% to be compounded quarterly

38. An amount of Rs 45 lacs is lent to three persons A, B and C @ 11% p.a. for 5 years 6 years and 7 years respectively if all the three repay equal amount find amount lent to A B AND C at the time of lending

39. An amount becomes triple in 20 years on simple interest find rate of interest and find after how long it will become 5 times

40. An amount becomes double in 4 years compounded annually after how long it will become

a) four times

b) 8 times

c) 32 times

41. An amount of Rs 34 lacs is required after 9 years find how much

a) monthly

b) quarterly

c) semi-annually is required to be invested if rate of interest is 9% pa

42. Find the issue price of 11% debenture /bond of Rs 2000 redeemable after 8 years at 6% premium if opportunity cost is 14%

43. A company issues 10000 equity shares of Rs 200 each at 40% premium find cost of equity if company has to declare dividend @ 12% with growth of 4%

44. The cost of equity is 23% with growth of 8% find market price of share if company has declared a dividend of Rs 45 four years back

45. An amount of Rs 45000 quarterly is invested on advance basis for 7 years find amount on maturity

46. An amount of Rs 20,000 pm is receivable for next five years find PV @ 9% pa if starts from today

47. An amount of Rs 4,67,000 has become Rs 8,97,000 in 6 years if compounded quarterly find the opportunity cost

48. An amount of Rs 45,00,000 has become Rs 64,00,000 @ 10% annually find the tenure of investment

49. A plant costing Rs 65 lacs was depreciated @ 12% pa if the WDV of plant is Rs 32.90 lacs find how old the plant is.

50. A plant costing Rs 54 lacs is purchased 9 years back if WDV is Rs 29.90 lacs find average rate of Depreciation if depreciated on diminishing balance method.

51. The salvage value of asset is reduced to 43% in 9 years if depreciated on diminishing balance method find the rate of depreciation.

52. 15 waters bottled are distributed in three groups in how many ways it is possible

53. 15 persons are divided into three groups find the number of possible ways

54. If the word ALPANA Is written in different ways find probability vowel and consonant is written alternatively

55. If the word COMMERCE is written in different ways find probability vowels will occupy same places

56. A house was purchased by paying Rs 4,50,000 as down payment and an EMI of Rs 23000 for next 12 years. If opportunity cost is 9% pa find the cost of house

57. if $^{m+n}c_3$=336 and $^{m-n}c_3$=120 find the value of m and n

58. 60 if $^{13}c_5+2\ ^{13}c_4+^{13}c_3= \ ^{15}c_x$ find the value of x

59. If $^n p_r$=336 and $^n c_r$=56 find the value of n and r

60. out of 7 ladies and 3 gents a committee is to be formed consisting ladies at least double the gents

61. If the difference in simple interest and compound interest compounded quarterly @ 11% for 5 years is Rs 3,56,000 find the investment

62. Find amount after 7 years 9 months if Rs 54 lacs is invested @ 7% pa to be compounded quarterly

63. An amount was invested for 7 years at simple interest had the rate of interest been higher by 15 Investor would have got ₹ 2800 more find the amount invested

64. Solve the following

   a) $|4x-7| > 9$

   b) $|2x+6| < 4$

65. If $f(x) = x^2 + 4$ and $g(x) = 4x-5$

Find   fof,   fog,   gof,   and   gog

66. Integrate the following functions

a) $\int x^3 e^{4x} dx$

b) $\int (x^3 \log x)\, dx$

c) $\int \frac{(x+5)e^x}{(x+6)^2}\, dx$

d) $\int \frac{dx}{x^2+6x+15}$

67. If α and β are the roots of equation $2x^2+6x-10=0$ find equation whose roots are α^3 and β^3

68. If roots of equation $3x^2-9x+k=0$ are reciprocal find the value of k

69. Find the sum of

a) $2.5 + 3.6 + 4.7 + 5.8 + $ -----------------------------------S_N

b) $2.7 + 6.12 + 10.17 + 14.22 +$------------------------------S_n

c) $\frac{1}{1.4} + \frac{1}{4.7} + \frac{1}{7.10} + \frac{1}{10.13} +$---------------------------------S_N

d) $1 + \frac{6}{4} + \frac{11}{16} + \frac{16}{64} + \frac{21}{256} + $ ----------------------------S_∞

e) $3 + \frac{7}{5} + \frac{11}{25} + \frac{15}{125} +$------------------------------------S_∞

f) $1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{9} + \frac{1}{8} + \frac{1}{27} + \frac{1}{16} +$----------------------$S_\infty$

g) $\frac{1}{3.7} + \frac{1}{7.11} + \frac{1}{11.15} + \frac{1}{15.19} +$------------------------$S_n$

70. If a, b, c are the pth, q^{th} and r^{th} terms of a GP find the value of $a^{q-r}b^{r-p}c^{p-q}$

71. If a b c are in AP and X Y Z are in GP Then find the value of $x^{b-c} \cdot y^{c-a} \cdot z^{a-b}$.

72. The sum of first 20 terms of GP is 244 times the sum of first 10 terms find the value of r

73. The sum of first two terms of GP is 5/3 and sum to infinity is 3 find the series

74. If A:B=2:3 B:C= 4:5 C:D=6:7 Find ratio in A:B:C:D

75. if $\log_{12}24=a$ $\log_{24}36=b$ and $\log_{36}48=c$ find   abc + 1

76. if $\dfrac{logx}{q-r} = \dfrac{logy}{r-p} = \dfrac{logz}{p-q}$ find the value of $x^{q+r} y^{r+p} z^{p+q}$

77. find the value of $\log_5(1+1/5) + \log_5(1+1/6) + \log_5(1+1/7) + \text{------------------} \log_5(1+1/624)$

78. The roots of the equation $x^2+kx +12=0$ differs by unity find the value of k

79. If one of the roots of equation is $2+\sqrt{3}$ find the equation

80. The age of a person is 8 years more than thrice the sum of age of his twin grandsons. after 8 years his age will be 10 years more than twice the sum of ages of his grandsons . Find the age of grandsons and the person.

81. A sum of money amount to Rs 6200 in two years and Rs 7400 in three years find the principal and rate of interest .

82. A sum of Rs 44,000 was lent to three persons on simple interest for 2 years 3 years and 6 years @ 6% 8% and 6% respectively. Find the individual amount lent

83. A B C D E and F are made to sit in a circle, in how many ways they can be made to sit if A must always have B or C on his right and B must always have either C or D on his right .

84. How many factors can be made of 54000

85. find the rank in dictionary of the following words

a) CHALK

b) GOOGLE

c) EXAMS

d) ASSISTANT

86. The effective rate of interest is 13.34 % if compounded monthly find nominal rate of interest

87. A and B throw a pair of dice till doublet appears if A starts the game find Prob of winning B

88. How many 4 digit numbers divisible by 5 can be formed with 0, 2, 4, 5 and 8

89. Find the sum of all 4 digit numbers formed with 3, 4, 6, 7

90. Find sum of all 5 digit numbers formed with 2, 3, 5, 6 and 7

91. A company wants to replace a plant costing 60 lakhs after 7 years when price will increase by 12% and there will be a scrap of Rs 6.00 lacs. Find quarterly provision if opportunity cost is 12%

92. The price Index computed by DR Pasche is 132 % and by Fisher it is 144% compute Lespeyers computation of index number

93. If regression co efficient are 2.30 and .18 find co efficient of co relation

94. If Arithmetic Mean between roots of equation is 6 and Geometric Mean is 3 find equation

95. the variance of x is computed as 16 and x and y are related to 4x-6y +5 =0 the variation of y shall be

96. While computing Standard deviation of 10 items an item 7 was wrongly taken as 5 if computed mean is 54 and SD is 5 compute correct mean and Standard deviation

97. A loan of ₹ 50,00,000 is repaid in 12 EMI of ₹ 8,00,000 find rate of interest

98. A man purchased car costing ₹ 9,00,000 and repaid 36 installments of ₹ 32,000 if interest is simple interest compute rate of interest

99. Solve

    (i) $\sum .94\overline{\overline{57}}$

    (ii) $\sum .932\overline{\overline{8}}$

    (iii) $\sum .8\overline{745}$

    (iv) $\sum .\overline{2757}$

100. A house was purchased at down payment of ₹ 15,00,000 and EMI for next 10 years @ ₹ 40,000 find the value of house if rate of interest is @ 9% p.a.