DQR

9. A random variable has the following probability distribution :

X	2	3	5
P	K	2K	2K

Find K.

A. 1/3

B. 2/5

C. 1/5

D. 2/3

10. A number is selected at random from the set {1, 2, ... 99}. The probability that it is divisible by 9 or 11 is ———

A. 19/100

B. 19/99

C. 10/100

D. 10/99

11. The coefficient of the range of the data: 7, 8, 4, 1, 9, 12, 18, 16, 94, 3, 5, -6 is ———

A. 133.6

B. 163.3

C. 166.3

D. 113.6

12. Two coins are tossed. Define the events A = {"the first toss is head"}, A_1 = {number of heads is 2}; A_2 = {number of heads is 1}; A_3 = {number of heads is 0} and A_4 = {"both outcomes are alike"}. The event A is independent of ———

A. A_1

B. A_2

C. A_4

D. A_1 and A_3 both

DQR

A less-than ogive curve is drawn by plotting

A. Less than Cumulative frequencies on the vertical axis

B. More than Cumulative frequencies on the vertical axis

C. Highest Frequencies on vertical axis

D. Lowest Frequencies on vertical axis

A says, "B is my sister's son". B says, "C is my father-in-law". C says, "D is my wife's brother". What can be the relationship between A and D?

A. Uncle-Nephew

B. Brother-Sister

C. Father-Son

D. Cousins

A is B's Sister. C is B's mother. D is C's father. E is D's mother. How is A related to D

A. Grandmother

B. Grandfather

C. Daughter

D. Grand Daughter

Two frequency distributions are given to you. To compare them visually, the best diagram to be drawn on the same sheet is

A. Pie chart

B. Histogram

C. Frequency polygon

D. Bar chart

DQR

16. Which of the following measure of central tendency will be unaffected if the lowest and highest observations are removed?

   A. Mean

   B. Mode

   C. Median

   D. Range

17. Which sampling is based on the discretion of the sampler?

   A. Systematic

   B. Multi-stage

   C. Stratified

   D. Purposive

18. Which of the followings is not a type of sampling?

   A. Probability

   B. Non-probability

   C. Stand-Alone

   D. Mixed

19. An ogive is used to represent:

   A. The frequency of each data point

   B. The number of data points falling below a specific value

   C. The proportion of data points falling below a specific value

   D. The relationship between two variables

(25)

DQR

86.　If $f(x)=(x-1)\times(x+1)$, then $\dfrac{dy}{dx} =$ _____

A.　$3x^2 -1$

B.　$3x^2 +1$

C.　$x^2 -3$

D.　$x^2 +3$

87.　The $\lim\limits_{x\to 2}\dfrac{x^2 - 4x + 4}{x - 2}$ _____

A.　0

B.　1

C.　2

D.　0.5

88.　Consider the following relations on $A=\{1, 2, 3\}$, $R=\{(1, 1), (1, 2), (1, 3), (3, 3)\}$ $S=\{(1, 1), (1, 2), (2,1), (2, 2), (3, 3)\}$, $T=\{(1, 1), (1, 2), (2, 2), (2, 3)\}$ and $\phi=$ empty set. Which one of these forms an equivalence relation?

A.　R

B.　S

C.　T

D.　ϕ

89.　If $f(x)=(x+1)^{x+1}$, then find $f'(0)$

A.　0

B.　1

C.　−1

D.　2

+

DQR

(9)

DQR

24. Ram borrowed ₹ 5,000 at 12.5% per annum compound interest. The money was repaid after 3 years. The total interest paid by him approximately is ——————, if $(1 + 0.125)^3 = 1.4238$

A. ₹ 2,119
B. ₹ 2,200
C. ₹ 2,000
D. ₹ 2,500

25. A person invests in a fund that pays 4% per annum for four years. The future value of current ₹4,000 would be ₹——————. (Use, if needed, $(1.04)^4 = 1.1698$, $\frac{1}{(1.04)^4} = 0.8548$, $(1.04)^5 = 1.2160$ and $\frac{1}{(1.04)^5} = 0.8219$.)

A. ₹ 3,419
B. ₹ 4,679
C. ₹ 4,866
D. ₹ 3,287

26. What is the present value of ₹ 5,000 to be obtained after six years if the interest rate is 5% per annum? (Use the following if needed $\frac{1}{1.05^n} = 0.74621$, 0.71068, 0.67686, and 0.64462, for $n = 6, 7, 8,$ and 9 respectively.)

A. ₹ 3,731
B. ₹ 3,553
C. ₹ 3,384
D. ₹ 3,223

27. Find the effective rate of interest if an amount of ₹ 40,000 deposited in a bank for 1 year at the rate of 10% compounded semi-annually.

A. 10.20%
B. 10.05%
C. 10.25%
D. 10.10%

DQR P.T.O

DQR

55. The range of the coefficient of correlation is

A. between −1 and 1

B. between −1 and 1 including 1

C. between −1 and 1 including −1

D. between −1 and 1 including −1, 1

56. A company produces 5 defective items out of 300 items. The probability distribution follows a :

A. Binomial distribution

B. Normal distribution

C. Poisson distribution

D. Standard normal distribution

57. The mean of Poisson distribution is 4. The probability of two-successes is —————.

A. $\dfrac{8}{e^4}$

B. $\dfrac{4}{e^4}$

C. $\dfrac{16}{e^4}$

D. $\dfrac{8}{e^2}$

58. If the regression lines are $3x - 4y + 8 = 0$ and $4x - 3y = 1$, then the correlation coefficient between x and y is —————.

A. 3/4

B. 3/8

C. 4/8

D. 1/4

51. If the arithmetic mean of two numbers is 10 and the geometric mean is 6, then the difference in the numbers is

A. 12

B. 14

C. 16

D. 8

52. In an arithmetic progression, the seventh term is x, and $(x+7)^{th}$ term is zero. Then x^{th} term is

A. 6

B. 7

C. 8

D. 10

53. If the second and eight terms of an arithmetic progression (AP) are equal to constant a, then the sum of first n terms of this AP is equal to

A. na

B. $\dfrac{a}{n}$

C. $2n + n(a - 1)$

D. $n + a(n - 1)$

54. The 3rd term of arithmetic progression is 7 and Seventh term is 2 more than thrice of third term. The common difference is

A. 4

B. 3

C. 5

D. 6

40. Eight friends A, B, C, D, E, F, G, and H are sitting around a circular table facing the centre. A is sitting two places to the right of B, who is sitting directly opposite D. C is sitting to the immediate left of B and to the immediate right of E. F, who is opposite to G, is not sitting next to A. Who is sitting to the immediate left of H?

    A. A

    B. B

    C. C

    D. D

41. The persons named U, V, W, X, Y and Z are sitting along the circumference of a round table. They are facing the center of the round table. Given: X is the third left of Z and U is the second right of X, W is third to Y's right. Then V is sitting immediate left to

    A. Y

    B. U

    C. W

    D. X

42. 5 persons are standing in a line. The 2 persons at the extreme ends are a professor and a business man. An advocate is standing to the right of student. An author is to the left of the business man. Counting from the Professor's end, the author is at which place?

    A. 2nd

    B. 3rd

    C. 4th

    D. 5th

82. If $\log_a b = 3$ and $\log_b c = 2$, then $\log_a c$ is:

A. 5

B. 6

C. 9

D. 1

83. If $2^x = 4^y = 8^z$ and $\dfrac{1}{2x} + \dfrac{1}{4y} + \dfrac{1}{6z} = \dfrac{24}{7}$, then the value of z is:

A. 7/16

B. 7/32

C. 7/48

D. 7/64

84. A fraction becomes 1, when 3 are added to the numerator and 1 is added to the denominator. But when the numerator and denominator are decreased by 2 and 1, respectively, it becomes 1/2. The denominator of the fraction is :

A. 5

B. 6

C. 7

D. 8

85. If the four numbers 1/4, 1/6, 1/10, and 1/x are proportional, then what is the value of x ?

A. 14

B. 15

C. 10

D. 1/12

DQR

43. The difference between the compound interest amount and the simple interest amount for a period of two years, at same interest rate r, is ————————.

A. $P \times r^2$

B. $P \times \frac{r}{2}$

C. $P \times 2 \times r$

D. $P^2 \times r$

44. A senior typist can type five reports and a junior typist can type three reports per day. But the management needs to complete at least 30 reports in a day. If S and J denote the number of senior and junior typists assigned for the work, which of the following inequality represents the constraint?

A. $5S + 3J \leq 30$

B. $3S + 5J > 35$

C. $5S + 3J \geq 30$

D. $3S + 5J < 30$

45. Given the constraints, $x \leq 3$, $y \leq 4$ and $4x + 3y \leq 12$, the point ———————— is in the feasible region. (Select from the below given list)

A. (3, 4)

B. (2, 4)

C. (2, 2)

D. (1, 1)

46. An amount ₹ 4,500 becomes ₹ 7,200 in two years at a simple interest rate of :

A. 15%

B. 25%

C. 30%

D. 40%

DQR

75. For a normal distribution, the ratio of mean deviation to the standard deviation is _____

    A. 0.4

    B. 0.6

    C. 0.8

    D. 1.0

76. The following table gives the cumulative probability function of X :

X :	0	1	2	3	4	5
Pr(X) :	6/30	5/30	13/30	1/15	1/10	1/30

The expectation of X is _____

    A. 1.8

    B. 1.7

    C. 1.5

    D. 1.6

77. For a binomial distribution, the variance is 0.2 and the mean is 0.6. The probability of getting 3 successes out of a trial of 5 is _____

    A. $\dfrac{80}{3^5}$

    B. $\dfrac{40}{3^5}$

    C. $\dfrac{20}{3^5}$

    D. $\dfrac{160}{3^5}$

DQR

71. A user wants to create a password using 4 lowercase letters (a-z) and 2 uppercase letters (A-Z). No letter can be repeated in any form. In how many ways can the password be created if the password must start with an uppercase letter?

A. $26 \times 25 \times 24 \times 23 \times 22 \times 5 \times 21$

B. $26 \times 25 \times 24 \times 23 \times 22 \times 2 \times 21$

C. $26 \times 5 \times 25 \times 24 \times 23 \times 2 \times 22 \times 21$

D. $6 \times 26 \times 25 \times 24 \times 23 \times 22 \times 21$

72. In how many ways can 5 boys and 3 girls sit in a row so that no two girls are together

A. 14,400

B. 14,000

C. 14,425

D. 12,400

73. In how many ways the letters of the word "STADIUM" be arranged in such a say that the vowels all occur together?

A. $7!/3!$

B. $5! \, 4!$

C. $5! \, 3!$

D. $7! \, 3!$

74. How many ways can 5 different trophies can be arranged on a shelf if one partic trophy must always be in the middle?

A. 24

B. 120

C. 48

D. 144

+ **DQR**

DQR

67. Which index number formula satisfies both the time reversal and factor reversal tests?

   A. Fisher's Ideal index

   B. Laspeyres' index

   C. Paasche's index

   D. Marshall-Edgeworth index

68. What of the followings is not a test of adequacy in the context of index numbers?

   A. Unit Test

   B. Square Test

   C. Circular Test

   D. Factor Reversal Test

69. If the prices of all commodities in the base year are twice the values of the respective commodities in the current year, then the Fisher's ideal index number is equal to :

   A. 200

   B. 50

   C. 400

   D. 25

70. Which index number formula does not satisfy the time reversal test?

   A. Fisher's Ideal index and Laspeyre's Index

   B. Laspeyres' index and Paasche's Index

   C. Paasche's Index and Fisher's Ideal Index

   D. Laspeyres' index, Fisher's Ideal Index and Paasche's Index

DQR

DQR

63. The equation $x^3 - 3x^2 - 4x + 12 = 0$ has three real roots. They are:

   A. $-2, 2, 3$

   B. $-2, -2, 3$

   C. $2, -2, -3$

   D. $-2, 2, -3$

64. If α and β are roots of the equation $ax^2 + bx + c = 0$, then the equation whose roots are $\dfrac{1}{\alpha}$ and $\dfrac{1}{\beta}$ is:

   A. $cx^2 - bx + a = 0$

   B. $cx^2 + bx + a = 0$

   C. $x^2 + bx + a = 0$

   D. $x^2 + bx - a = 0$

65. If α and β are roots of the equation $x^2 - 8x + 12 = 0$, then $\dfrac{1}{\alpha} + \dfrac{1}{\beta} =$ _____

   A.   2/3

   B.   2/4

   C.   3/4

   D.   4/5

66. The roots of the equation $x^2 - 7x + 10 = 0$ are:

   A.   2 and 5

   B.   -2 and -5

   C.   2 and -5

   D.   -2 and 5

+

DQR

59. A car starts from a point, runs 20 kms towards north, turns right and runs 35 kms, turns right again and runs. Which is the direction now it is facing?

 A. North

 B. South

 C. East

 D. West

60. Shyam walks 12 m South from his house, turns left and walks 20 m, again turns left and walks 15 m, then turns right and walks 10 m to reach coffee shop. In which direction is coffee shop from his house?

 A. South West

 B. East

 C. North East

 D. North

61. If Shyam sees the rising sun behind the tower and setting sun behind the Railway station from his house. What is the direction of tower from the Railway station?

 A. South

 B. North

 C. West

 D. East

62. Five players named as A, B, C, D, and E are sitting on a bench, facing south, and are waiting to be interviewed by a selector. The person C is an immediate neighbor of both A and B; The person A is the fourth person from right end; If E is to the right of B, then where is E sitting?

 A. Fifth from right end

 B. Fourth from right end

 C. Fifth from left end

 D. Second from right end

DQR

DQR

47. The mean of a set of 20 observations in 18.3. The mean is reduced by 0.6 when a new observation is added to the set. The new observation is:

A. 17.6

B. 18.9

C. 5.7

D. 24.6

48. Consider the data sets : $X = \{-6, 2, -2, 6\}$, $Y = \{4, 8, 2, 6\}$, $Z = \{103, 100, 102, 101\}$. Let S_x, S_y and S_z be the standard deviations of the sets X, Y and Z respectively. We have the relations,

A. $S_x < S_y < S_z$

B. $S_z < S_y < S_x$

C. $S_z < S_x < S_y$

D. $S_x < S_z < S_y$

49. If in a data set, 25 percent of values are smaller than 30 and one-fourth of values are larger than 70, then the coefficient of quartile deviation is ———— %.

A. 40

B. 30

C. 70

D. 50

50. If there are two groups containing 40 and 30 observations and have arithmetic means as 50 and 60, then the combined arithmetic mean is

A. 55.48

B. 56.35

C. 54.28

D. 50.28

(27)

DQR

94. From a bag containing 4 red, 5 blue and 6 white caps, two caps are drawn without replacement. What is the probability that the caps are of different colours?

    A. $\dfrac{74}{105}$

    B. $\dfrac{37}{105}$

    C. $\dfrac{94}{105}$

    D. $\dfrac{31}{105}$

95. A question in statistics is given to three students A, B, and C. Their chances of solving the question are 1/3, 1/5 and 1/7 respectively. The probability that the question would be solved is

    A. 19/35

    B. 16/35

    C. 1/105

    D. 104/105

96. A company produces two types of products, A and B. The probability of a defective product in type A is 0.05 and in type B is 0.03. If the company produces 60% type A and 40% type B, what is the probability of a randomly selected product being defective?

    A. 0.042

    B. 0.03

    C. 0.048

    D. 0.052

(23)

DQR

78. Ram started walking from A, 200 m towards North to reach B. Then he turned right and walks 300 m to reach C. Then he turns right and walks 350 m to reach D. Then he turns left and walks 150 m to reach E. Finally, he turns left and walks 150 m. He arrived at the point F. What is the distance between point A and F?

 A. 450 m

 B. 200 m

 C. 250 m

 D. 300 m

79. What comes next in the series: FMAMJJASON?

 A. DJM

 B. DBM

 C. DJF

 D. DDJ

80. In a series of letters, which one is the odd one out: BDFH, JLNP, RTVX, ZBDE?

 A. BDFH

 B. JLNP

 C. RTVX

 D. ZBDE

81. Roy walks 2 kms to West, then turns and starts walking South-East. He walks 3 kms. Then he turns North and walks 5 kms. Then again, he turns East and walks 2 kms. Finally, he turns South and walks 6 kms. In which direction, is he from the starting point?

 A. South-West

 B. South-East

 C. North-East

 D. North-West

DQR

P.T.O.

DQR

97. In a certain code TEACHER is written as VGCEJGT, How is CHILDREN written in that code.

   A. EJKNEGTP

   B. EGKNFITP

   C. EJKNFGTO

   D. EJKNFTGP

98. If a function is given by $f(x) = e^{3x}$, what is the derivative of the function?

   A. $3e^{3x}$

   B. e^{3x}

   C. $3xe^{3x}$

   D. $3e^{3x} + 3$

99. Find the missing value in the series : 51, 52, 60, 87, 151, ___ , 492.

   A. 195

   B. 276

   C. 317

   D. 420

100. In a certain code INACTIVE is written as VITCANIE, How is COMPUTER written in the same code

   A. PMOCRETU

   B. ETUPMOCR

   C. UTEPMOCR

   D. MOCPETUR

DQR

36. The average of base year and current year is used in ———————— index number.

   A. Laspeyre's

   B. Paasche's

   C. Fisher's ideal

   D. Marshall-Edgeworth

37. If $Cov(X, Y) = -2.15$, $S_x = 1.30$, $S_y = 2.50$ then correlation Coefficient r is

   A. -0.66

   B. 0.66

   C. 0.76

   D. 0.99

38. For a group of 10 students the sum of squares of difference in ranks for Physics and Chemistry marks was 60, what is the value of rank correlation coefficient. (Choose the nearest value)

   A. 0.636

   B. 0.725

   C. 0.698

   D. 0.842

39. Spearman's Correlation Coefficient is used to check:

   A. The scattering of the data

   B. The relationship in variables

   C. The median of a data

   D. The range of a data

DQR

DQR

20. Pointing to a photograph, Ms. X says, "This man's son's sister is my sister-in-law." How is the Ms. X's husband related to the man in the photograph?

    A. Son

    B. Grandson

    C. Brother

    D. Nephew

21. Consider the relations: Raja is husband of Devi; Karan is the father of Gopal; Arjun is the son of Shoba; Ashok is brother of Shoba; Arjun's father Karan is the son-in-law of Devi. How is Raja related to Ashok?

    A. Father

    B. Uncle

    C. Son-in-law

    D. Grandfather

22. A, B, C, D, E and F are standing in a circle talking, facing inward. E is right to C who is standing 3 places away from D. A is standing 2 seats away from F.

    Which of the following has to be true?

    A. A is standing opposite to C

    B. A is standing next to E

    C. A is standing next to D

    D. A is standing next to B

23. X, a male, introduces Y saying, "He is the husband of the granddaughter of the father of my father". How is Y related to X?

    A. Brother

    B. Father

    C. Brother-in-law

    D. Father-in law

DQR

90. You bought a painting 10 years ago as an investment. You originally paid ₹ 85,000 for it. If you sold it for ₹ 4,84,050, what was your annual return on investment?

    A.   47%

    B.   4.7%

    C.   19%

    D.   12.8%

91. What is the present value of an investment that pays ₹ 400 at the end of three years and ₹ 500 at the end of 6 years?

    A.   ₹ 320

    B.   ₹ 335

    C.   ₹ 340

    D.   ₹ 280

92. At 8% compounded annually, how long will it take ₹ 750 to double?

    A.   6.5 years

    B.   48 months

    C.   9 years

    D.   12 years

93. You are considering two investments: Investment A yields 10% compounded quarterly. Investment B yields r% compounded semi-annually. Both investments have equal annual yields. Find r.

    A.   19.875%

    B.   10%

    C.   10.38%

    D.   10.125%

DQR

5. If a loan of ₹ 30,000 is to be paid in 5 annual instalments with interest rate of 14% per annum, then the equal annual instalment will be _____ (Take $P(5, 0.14) = 3.43308$)

A. ₹ 7,400

B. ₹ 8,100

C. ₹ 8,738

D. ₹ 8,322

6. Assuming that the discount rate is 12% per annum, how much would you pay to get ₹ 100 per year, growing at 4%, annually forever?

A. ₹ 1,425

B. ₹ 1,300

C. ₹ 1,250

D. ₹ 1,150

7. Find the future value of an annuity of ₹ 5,000 made annually for 6 Years at interest rate of 12% compounded annually, if $(1 + 0.12)^6 = 1.9738$.

A. ₹ 45,575

B. ₹ 40,575

C. ₹ 39,465

D. ₹ 37,868

8. If the interest rate on a loan is 1% per month, the effective annual rate of interest is:

A. 12%

B. 12.36%

C. 12.68%

D. 12.81%

DQR

28. For the first 20 natural numbers, the standard deviation is ————————
    A. 5.77
    B. 7.75
    C. 5.64
    D. 6.54

29. If Mean Deviation about Arithmetic Mean is 1.78 and Arithmetic Mean is 3.50 then coefficient of Mean Deviation about Arithmetic Mean is
    A. 50.85
    B. 44.33
    C. 52.65
    D. 51.85

30. If Mean of a data set is 22 and Median is 22.33 then Mode is
    A. 21
    B. 21.34
    C. 22.99
    D. 21.54

31. If Arithmetic Mean and coefficient of variation of y are 5 and 20 respectively, the variance of $12 - 3y$
    A. 9
    B. 81
    C. 3
    D. 100