1. U is father of W, X is son of V, Y is brother of U. If W is sister of X, how is X related to Y ?

(A) Father (B) Sister-in-law

(C) Nephew (D) Grandson

2. Standard Error (SE) and square root of sample size are

(A) Directly proportional (B) Equal

(C) Inversely proportional (D) Not equal

3. The mean of three numbers is 135. Among the three numbers the biggest number is 180. The difference between the remaining two numbers is 25. Then the smallest number is

(A) 130 (B) 125

(C) 120 (D) 100

4. B is daughter of A. C is brother of B. C is the only son of D. C and E are married couple. F is the only son of E. Then how is F related to A ?

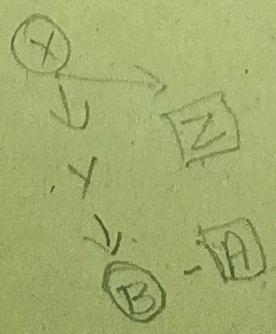
(A) Grandson (B) Father

(C) Brother (D) Uncle

5. Given that X is mother of Y. Z is son of X. A is brother of B. B is daughter of Y. Who is grandmother of A ?

(A) X (B) Y

(C) A (D) B



6. Which sampling technique is most appropriate when a person wants to ensure that subgroups are proportionally represented ?

(A) Stratified Sampling
(B) Simple Random Sampling
(C) Multistage Sampling
(D) Systematic Sampling

7. For the non–overlapping classes 25-34, 35-44, 45-54, 55-64 the class mark of the class 35-44 is

(A) 39.5
(B) 40.5
(C) 35.0
(D) 44.0

8. Non-probability Sampling is also known as :

(A) Stratified Sampling
(B) Simple Random Sampling
(C) Purposive or Judgment Sampling
(D) Cluster Sampling

9. Out of 1000 persons, 40% are female, others are male. In a marriage function, 300 persons enjoyed the song. 30% of the people who had not enjoyed the song were female. What is the number of male, who did not enjoy the song in the function ?

(A) 120
(B) 180
(C) 360
(D) 490

10. In tabular presentation of data, stub is _____.

(A) Left part of table, which provide the description of rows
(B) Right part of the table providing the description of the row
(C) Left part of the table providing the description of columns
(D) Right part of the table providing the description of columns

11. Mean deviation is _____ when the deviations are taken from the median.

(A) maximum (B) minimum

(C) zero (D) can't say

12. If x and y are related as $4x + 2y + 12 = 0$ and mean deviation of x is 4.5, then the mean deviation of y is

(A) −9 (B) 9

(C) 1.1 (D) 4.5

13. For a distribution the mean is 30. The standard deviation is 2, then coefficient of variation is

(A) 6.67% (B) 9.45%

(C) 7.5% (D) 2.5%

14. Ogive is used to find

(A) Mean (B) Median

(C) Mode (D) Range

15. The algebraic sum of deviation of set of observations from their arithmetic mean is

(A) $\frac{\Sigma x_i}{n}$ (B) $\sqrt{\frac{\Sigma(x_i - \bar{x})^2}{(n-1)}}$

(C) $\frac{\Sigma x_i}{(n-1)}$ (D) Zero

16. Find the Harmonic Mean of 2, 4 & 6.

(A) 3.30

(B) 3.00

(C) 3.75

(D) 4.00

17. If the mode of the following data is 13, then the value of x in the data set is

13, 8, 6, 3, 8, 13, $2x + 3$, 8, 13, 3, 5, 7

(A) 6

(B) 5

(C) 7

(D) 8

18. The best measure of central tendency is

(A) Mean

(B) Median

(C) Mode

(D) Range

19. A sample of 100 people is taken from a population of 1000. The sample mean height is 170 cm with a standard deviation of 10 cm. What is the standard error of mean ?

(A) 0.5 cm

(B) 1.0 cm

(C) 1.58 cm

(D) 10 cm

20. In pie chart, if a category represents 25% of the total data, what will be the angle of corresponding sector ?

(A) 90°

(B) 45°

(C) 60°

(D) 75°

21. Let A and B be two possible outcomes of a random experiment and $P(A) = \frac{1}{3}$, $P(A \cup B) = \frac{1}{2}$ and $P(B) = x$. For what value of x are A and B mutually exclusive events ?

(A) $\frac{1}{4}$ (B) $\frac{1}{6}$

(C) $\frac{1}{5}$ (D) $\frac{1}{8}$

22. A random variable X has the following probability density function :

$$f(x) = 6x(1-x),\ 0 \le x \le 1$$

Then the mean is

(A) $\frac{1}{12}$ (B) $\frac{1}{3}$

(C) $\frac{1}{4}$ (D) $\frac{1}{2}$

23. The standard deviation of the data 2, 4, 5, 6, 8, 17 is 23.33, then the standard deviation of the data 4, 8, 10, 12, 16, 34 is

(A) 23.33 (B) 46.66

(C) 12.23 (D) 0

24. The values of the first quartile and third quartile are 36.50 and 57.50. Then the semi-inter-quartile range is

(A) 47.50 (B) 12.50

(C) 10.50 (D) 11.50

25. The AM & GM for two observations are 8 and 2. Find the values of two observations.

(A) 15.75, 0.25 (B) 16, 1

(C) 15, 1 (D) 14.75, 1.75

26. A random variable has the following probability distribution :

X :	0	1	2	3
P :	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$

Find expected value of X.

(A) 1.43 (B) 1.20

(C) 1.80 (D) 2.00

27. What will be the mode of the Binomial distribution in which mean is 20 & Standard Deviation is $\sqrt{10}$?

(A) 20.5 (B) 21

(C) 20 (D) 41

28. If X is a Poisson variable such that P(X=1) = P(X=2) then the variance is

(A) 2 (B) 1

(C) $\sqrt{2}$ (D) 3

29. Which one of the following statement is wrong ?

(A) The normal curve is bell shaped.

(B) The correlation coefficient between X and Y is 2.6.

(C) If r = 0, regression lines are perpendicular to each other.

(D) For any two events A and B, $P(A \cup B) = P(A) + P(B) - P(A \cap B)$.

30. Let $P(A) = \frac{1}{5}$ and $P(\overline{B}) = \frac{3}{5}$. If A and B are mutually exclusive events then $P(A \cup B)$ is

(A) $\frac{1}{5}$ (B) $\frac{3}{5}$

(C) $\frac{2}{5}$ (D) $\frac{4}{5}$

31. The mean deviation of normal distribution is approximately equal to

(A) $0.5\,\sigma$ (B) $3.14\,\sigma$

(C) $1.14\,\sigma$ (D) $0.8\,\sigma$

32. You are given the following data relating to a frequency distribution of 10 observations :

$\Sigma X = 50, \Sigma Y = 60, \Sigma X^2 = 300, \Sigma Y^2 = 352, \Sigma(X + Y)^2 = 1372$

then Cov(X, Y) is

(A) 2 (B) 4

(C) 6 (D) 8

33. If 3 percent of ceramic cup manufactured by a company are known to be defective. What is the probability that a sample of 100 cups are taken from the production process, of that company would contain exactly one defective cup ?

(A) 0.15 (B) 0.03

(C) 0.09 (D) 0.30

34. A population comprises 7 members. The number of all possible samples of size 3 that can be drawn from it with replacement is –

(A) 216 (B) 343

(C) 21 (D) 125

35. Compute the rank correlation coefficient from the following data :

$n = 10, \Sigma d^2 = 5$

(A) 0.95 (B) 0.97

(C) 0.96 (D) 0.99

36. If $r = 0.8$, $b_{yx} = 0.6$, $b_{xy} = 0.5$, $\bar{x} = 5$ and $\bar{y} = 3$, then the regression equation y on x is

(A) $y = 0.6x - 6.0$ (B) $y = 0.96x - 3.7$

(C) $y = 0.8x$ (D) $y = 0.6x$

37. Which one of the following index uses the method of average of base year and current year ?

(A) Laspeyre's Index (B) Paasche's Index

(C) Marshall–Edgeworth Index (D) Fisher's Index

38. If $r = 0.8$ then coefficient of non determination is

(A) 0.36 (B) 0.64

(C) 0.20 (D) -0.36

39. The correlation coefficient between X and Y is 0.2 and $Var(X) = 5Var(Y)$ then regression coefficient of X on Y is

(A) $\frac{1}{5}$ (B) $\sqrt{5}$

(C) $\frac{1}{\sqrt{5}}$ (D) 5

40. If Laspeyre's index number is 125 and Paasche's index number is 500 then Fisher's index number is

(A) 312.5 (B) 250.0

(C) 62.5 (D) 147.5

41. When the cost of Beverages increased by 40%, the person said that the rise had increased his cost of living by 8%. Before the change in price, the percentage of his cost of living was due to buying Beverages is :

(A) 15% (B) 20%

(C) 5% (D) 2%

42. If the prices of all the goods change in the same ratio, then

(A) Laspeyre's index and Paasche's index numbers are equal.

(B) Laspeyre's index and Paasche's index numbers are not equal.

(C) Laspeyre's index is greater than Paasche's index number.

(D) Laspeyre's index is less than Paasche's index number.

43. Given that $\Sigma p_n q_n = 300$, $\Sigma p_0 q_0 = 125$ and Paasche's index number is 200 then the value of $\Sigma p_0 q_n$ is

(A) 125 (B) 150

(C) 250 (D) 100

44. If $\left(\frac{x}{y}\right)^{a^2+4} = (x^{-1}y)^{-5a}$ then the value of a is

(A) $-4, 1$

(B) $4, -1$

(C) $-4, -1$

(D) $4, 1$

45. If $x = \sqrt{2} + \frac{1}{\sqrt{2}}$ and $y = \sqrt{2} - \frac{1}{\sqrt{2}}$ then $x^2 + y^2$ is

(A) $\sqrt{2}$

(B) $\frac{1}{\sqrt{2}}$

(C) 5

(D) 0

46. Suppose a father had a sum of ₹ 3,600 and he decided to divide this amount among his three sons Anil, Sunil and Nimal in such a way that 3 times Anil's share, 6 times Sunil's share, and 8 times Nimal's share are all equal. Then Anil's share is

(A) ₹ 1,920

(B) ₹ 960

(C) ₹ 720

(D) ₹ 1,860

47. The ratio of age of two sisters is 5 : 7. One is elder to the other by 8 years. Then the ratio of their age after 4 years between older to younger is

(A) 2 : 5

(B) 4 : 3

(C) 4 : 5

(D) 3 : 5

48. What are the values of x & y from the given equations ?

Given that $\frac{x}{2}-\frac{y}{5}=y-x$ and $\frac{x-5}{y-10}=1$

(A) (15, 20)

(B) (20, 25)

(C) (25, 30)

(D) (30, 35)

49. A company produce two type of product A & B which require processing in two machines. First machine can be used up to 15 hrs. and second can be used at most 12 hrs. in a day. The product A requires 2 hrs. on machine 1 & 3 hrs. on machine 2. The product B requires 3 hrs. on machine 1 & 1 hour on machine 2. This can be expressed as :

(A) $2x_1 + 3x_2 \leq 15$

$3x_1 + x_2 \leq 12$

(B) $2x_1 + 3x_2 \leq 15$

$3x_1 + x_2 \leq 15$

(C) $3x_1 + 2x_2 \leq 15$

$2x_1 + x_2 \leq 12$

(D) $2x_1 + 3x_2 \leq 12$

$3x_1 + x_2 \leq 15$

50. If α and β are roots of the equation $2x^2 - 4x + 6 = 0$ then the quadratic equation with roots $\frac{\alpha^2}{\beta}$ and $\frac{\beta^2}{\alpha}$ is

(A) $3x^2 - 10x + 9 = 0$

(B) $3x^2 + 10x + 9 = 0$

(C) $x^2 - 13x + 3 = 0$

(D) $x^2 + 10x + 9 = 0$

51. A manufacturer produces two products A and B. The profit on product A is ₹ 8 on each unit and profit on product B is ₹ 13 on each unit. Then the objective function is

(A) Minimize $Z = 8x_1 + 13x_2$

(B) Maximize $Z = 8x_1 + 13x_2$

(C) Minimize $Z = 13x_1 + 8x_2$

(D) Maximize $Z = 13x_1 + 8x_2$

52. A certain amount at a rate of simple interest x, doubles in 5 years. At another rate of simple interest y, it becomes three times in 8 years. Then the difference between these two interest rates is

(A) 5%

(B) 8%

(C) 3%

(D) 4%

53. Anil deposited a certain amount in a bank at the rate of 10% per annum compounded semi–annually. At the end of one year Anil received a sum of ₹ 13,230. Then the sum deposited in the bank is

(A) ₹ 13,000

(B) ₹ 1,200

(C) ₹ 12,000

(D) ₹ 5,000

54. The simplified value of $[5a^5 b^2 \times 3(a\, b^3)^2]/(15a^2 b)$ is

(A) $a^5 b^7$

(B) $a^7 b^7$

(C) $a^5 b^5$

(D) $a^7 b^5$

55. Three Employees A, B and C of a firm receive variable incentive money in the ratio 3 : 4 : 5. Then the Management also gave a fixed incentive of ₹ 4,000 to each of them. As a result now the total incentive amount of A, B and C becomes in the ratio 5 : 6 : 7. How much amount did B get as variable incentive ?

(A) ₹ 2,000

(B) ₹ 4,000

(C) ₹ 6,000

(D) ₹ 8,000

56. The future value of an annuity of ₹ 7,200 made annually for 5 years at the rate of 12% compounded annually is (Given that $(1.12)^5 = 1.76234$)

(A) ₹ 45,740.40 (B) ₹ 4,574.50

(C) ₹ 54,740.50 (D) ₹ 2,400.50

57. John borrows a loan of ₹ 10,000 from a bank and he agreed to pay back in 24 equal instalments at the rate of 10% compound interest per annum. Then each instalment amount is (Given that $(1.1)^{24} = 9.84973$)

(A) ₹ 1,200.35 (B) ₹ 1,112.99

(C) ₹ 1,211.99 (D) ₹ 1,321.56

58. What is the present value of ₹ 8,000 to be required after 10 years if the interest rate be 6% ? (Given that $(1.06)^{10} = 1.7908$)

(A) ₹ 6,499.87 (B) ₹ 4,467.28

(C) ₹ 5,867.32 (D) ₹ 1,790.86

59. The effective rate of interest corresponding to a nominal rate of 8% per annum payable quarterly is (Given that $(1.02)^4 = 1.08243216$)

(A) 6.24% (B) 5.38%

(C) 8.24% (D) 82.4%

$(1+i)^n - 1$

60. Sunil plans to save for his higher studies. He wants to accumulate a sum of ₹ 5,00,000 at the end of 10 years. How much amount should he invest every year if the interest rate is 10% compounded annually ?

(Given that $(1.1)^{10} = 2.593742$)

(A) ₹ 31,372.71 (B) ₹ 3,137.27

(C) ₹ 31,312.71 (D) ₹ 3,000.32

61. ₹ 1,500 is paid every years for 10 years to pay a loan. What is the loan amount, if rate of interest 5% p.a ? If $(1.05)^{10} = 1.6288$

(A) ₹ 11,581.53

(B) ₹ 11,505.50

(C) ₹ 11,903.38

(D) ₹ 12,503.48

62. A certain amount is invested in a bank. What annual rate of interest compounded annually becomes 8 times of this investment in 5 years ?

(Given that $8^{1/5} = 1.515716$)

(A) 51.57%

(B) 5.15%

(C) 15.15%

(D) 1.51%

63. If the compound interest on a certain sum for 2 years at 5% per annum is ₹ 246, then the simple interest on the same sum for double the time and double the rate per annum is :

(A) ₹ 900

(B) ₹ 960

(C) ₹ 1,000

(D) ₹ 1,100

64. Sam invested ₹ 12,000 for 10 years in a financial company. At the end of 10^{th} year his investment value is ₹ 18,000. Then the Compound Annual Growth Rate (CAGR) is if $(x)^{1/n} = 1.0413$

(A) 41.40%

(B) 4.13%

(C) 11.56%

(D) 12.06%

65. Mr. A invested ₹ 20,000 in a bank at the rate of 4.5% p.a. He received ₹ 27,500 after end of term. Find out the period ?

(A) 4.50 Yrs

(B) 8.34 Yrs

(C) 6.50 Yrs

(D) 8.10 Yrs

27500 = 2000 × 4.5%

$A = P(1+i)^n$

25500 27500 = 20000(1+i)

66. Assuming that the discount rate is 12% per annum, how much would you pay to receive ₹ 100, growing at 8% annually forever ?

(A) ₹ 2,500

(B) ₹ 2,700

(C) ₹ 3,000

(D) ₹ 2,000

67. In how many ways can 5 Doctors, 4 Professors, and 6 Auditors be seated in a row so that all person of the same profession sit together ?

(A) $3! \times 5!$

(B) $3! \times 5! \times 4!$

(C) $3! \times 5! \times 4! \times 6!$

(D) $3! \times 5! \times 6!$

68. The sum of the 4^{th} and 8^{th} term of an AP is 10. Then the sum of first eleven terms of the series is

(A) 33

(B) 22

(C) 44

(D) 55

69. Madhu deposits ₹ 100 in a Bank at the beginning of every year for 20 years at 10% interest rate compounded annually, how much would she earn after 20 years ? [Given that $(1.1)^{20} = 6.7275$]

(A) ₹ 6,300.25

(B) ₹ 6,500.45

(C) ₹ 5,600.25

(D) ₹ 6,250.35

70. How much amount is required to be invested every year so as to accumulate ₹ 15,00,000 at the end of 20 years if interest is compounded annually at 10% ? [Given A(n, i) = 57.274999]

(A) ₹ 26,189.44

(B) ₹ 29,190.35

(C) ₹ 24,155.35

(D) ₹ 30,698.44

71. In how many ways can 13 balls be arranged, if 4 of them are black, 6 red & 5 are white ?

(A) 3004 (B) 3005

(C) 3003 (D) 3008

72. Find the 9th term of the A.P. 8, 5, 2, –1, –4, ...

(A) –10 (B) –24

(C) –16 (D) –4

73. The sum of series 1 + 2 + 3 + ... is 55. The number of terms is :

(A) 40 (B) 30

(C) 20 (D) 10

74. A panel has total of 11 members including 5 males and 6 females. Find out the number of ways of picking 2 males and 3 females from the given panel team.

(A) 110 (B) 200

(C) 220 (D) 350

75. The product of three numbers which are in GP is 512. Then the second number is

(A) 2 (B) 3

(C) 6 (D) 8

76. Let A = {a, b, c, d, e} then the number of proper subsets is

(A) 31 (B) 32

(C) 30 (D) 29

77. If $x = at^2$ and $y = a(t^3 - t)$ then $\frac{dy}{dx} =$

(A) $\frac{3t^2 - 1}{2t}$ (B) $\frac{3t^2 - t}{2t}$

(C) $\frac{3t^2 - 1}{t}$ (D) $\frac{3t^2 + 1}{2t}$

78. The marginal revenue function for a product MR $= 5 - 4x + 3x^2$. Then the total revenue function is

(A) $5x + 2x^2 + x^3$ (B) $5x - 2x^2 + x^3$

(C) $5x + 2x^2 + x^3 + 3$ (D) $5x - 2x^2 - x^3$

79. Evaluate : $\lim_{x \to 3} \frac{x^2 + 4x + 3}{x^2 + 6x + 9}$

(A) $\frac{2}{3}$ (B) $\frac{2}{8}$

(C) 2 (D) $\frac{1}{3}$

80. In how many ways can an interview panel of 3 members be formed from 3 engineers, 2 psychologists and 3 managers if at least 1 engineer must be included ?

(A) 30 (B) 15

(C) 46 (D) 45

81. A = {a, b, p}, B = {2, 3}, C = {p, q, r, s} then n[(A ∪ C) × B] is :

(A) 8 (B) 20

(C) 12 (D) 16

82. Find the missing term CEGI, XVTR, GIKM, _____.

(A) TRPN

(B) KMBD

(C) AMNL

(D) JLNP

83. In certain code language 'CLOCK' is coded as 75276 and 'EARTH' is coded as 83491, then 'COAT' is coded as

(A) 7329

(B) 7239

(C) 7932

(D) 7529

84. Find the missing term of series 2, 7, 16, 29, …. , 67, 92

(A) 39

(B) 46

(C) 43

(D) 62

85. $\int (2x+5)^7 \, dx$

(A) $\frac{(2x+5)^8}{16}$

(B) $\frac{(2x+5)^7}{7}$

(C) $\frac{(2x^2+5x)^7}{2}$

(D) $\frac{(2x^2+5x)^7}{5}$

86. A committee of 3 members is formed from 5 women and 3 men in such a way that it consists at least 2 members who are women. In how many different ways can it be done ?

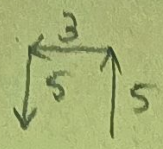
(A) 40

(B) 50

(C) 60

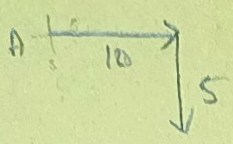
(D) 30

87. Anil started walking 5 kms towards north then he turned left and walked 3 kms. Again he turned left and walked 5 kms. Then the total number of kms he walked is



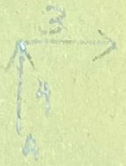
(A) 13 kms
(B) 8 kms
(C) 3 kms
(D) 5 kms

88. Raju started walking 10 kms towards east from his home. He turned right and walked 5 kms to the south to reach his school. In which direction is his school from his home ?



(A) South-East
(B) North-East
(C) South-West
(D) North-West

89. A started walking from his house & walk 4 km north side then turns right & walk 3 km. If he turns right again, what is the direction now ?



(A) North
(B) West
(C) East
(D) South

90. In a certain language 'MENTION' is written as 'NFOUJPO', the code of 'MYSTIFY' is :

MENTION
NFOUJPO
MYSTIFY
N Z

(A) NZTUJGZ
(B) NFOFTJT
(C) LNEITNO
(D) OERESTN

91. Find the odd man out from the following :

Marriage, Wedlock, Divorce, Matrimony

(A) Marriage
(B) Wedlock
(C) Divorce
(D) Matrimony

92. Eight persons A, B, C, D, E, F, G and H are sitting in two rows opposite to each other. Each row has 4 persons. B and C are sitting opposite side. C is sitting in between E and D. H is sitting immediate left of E. F and H are sitting at diagonally opposite position. G is sitting extreme left. Who is sitting in front of E ?

(A) F (B) G

(C) B (D) A

93. Five persons A, B, C, D and E are sitting in a circle facing centre. C is sitting immediate left of E. A is sitting in between E and D. Who is sitting between B and A ?

(A) C (B) D

(C) E (D) B

94. A man starts walking 10 km to the North. He turns right and walks 5 km, then turns right again and walks 10 km. In which direction is man now from the starting point ?

(A) East (B) West

(C) North (D) South

95. In the morning Anika started walking from a point where her shadow falls in front of her. She walked 2 kms and then turned left and walked 2 kms. Again she turned left and walked 2 kms. In which direction is she now facing ?

(A) East (B) West

(C) South (D) North

96. Five persons A, B, C, D & E sitting on a bench. A is immediate right of B. E is immediate left of C and immediate right of A. B is the right of D. Which person is sitting in the middle of bench ?

(A) B (B) E

(C) A (D) D

97. L is wife of N, P is son of N, K is brother of N and father of O. What is the relationship of P and O ?

(A) Uncle (B) Brother

(C) Cousin (D) Nephew

98. C is sister of B. D is father of A. A is brother of B. D and E are married couple. How is C related to E ?

(A) Daughter (B) Son

(C) Mother (D) Father

99. Five people A, B, C, D, E are seated about a round table facing outside the center but not necessary in the same order. A sits at immediate right of E. C sits third to the left of D, who sits at the immediate right of A. How many persons are sitting between C & D ?

(A) 1 (B) 2

(C) 3 (D) 4

100. Five friends A, B, C, D and E are sitting in a row facing east. A is sitting between C & D. B is second to the left of C. Who is sitting at the south end ?

(A) E (B) B

(C) C (D) D