Total No. of Printed Pages : 13

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

A

SET-Y

UG-4Yr.EE-June, 2025

SUBJECT : B.Sc.-Statistics

Sr. No. 10077

Time : **1¼ Hours** Max. Marks : **100** Total Questions : **100**

Roll No. (in figures)_____ (in words) _____

Name _____ Date of Birth_____

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(Signature of the Candidate) (Signature of the Invigilator)

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SEAL

1. Which of the following is a null set ?

(1) $\{0\}$ (2) $\{x : x^2 = -1\}$

(3) $\{x : x > 2\}$ (4) $\{2, 4, 6\}$

2. The power set of a set with 3 elements contains :

(1) 6 subsets (2) 4 subsets

(3) 9 subsets (4) 8 subsets

3. Common ratio of GP : 3, 6, 12, 24 ..... is :

(1) 2 (2) 3

(3) 1 (4) 6

4. The composition of functions $f : A \to B$ and $g : B \to C$ is defined as :

(1) f o g (2) g o f

(3) f + g (4) g + f

5. Sum of first 5 terms of GP : 1, 2, 4, 8, ... is :

(1) 31 (2) 30

(3) 32 (4) 15

6. The value of sin (90°) is :

(1) –1 (2) 0

(3) 1 (4) Undefined

7. The principal value of $\sin^{-1}(1)$ is :

(1) π (2) $\pi/4$

(3) 0 (4) $\pi/2$

8. Thenth term of AP is given by :

(1) a – (n–1) d (2) a + (n–1) d

(3) a (n – d) (4) nd

9. Which identity is ***correct*** ?

(1) $\sin^2 x + \cos^2 x = 1$ (2) $\tan^2 x + 1 = \sec x$

(3) $\sec x . \cot x = 1$ (4) $\sin x = \cot x$

10. If $\tan A = \frac{3}{4}$, then sec A is :

(1) 5/4 (2) 4/5

(3) 5/3 (4) 5/6

11. The square of imaginary number 'i' is :

(1) 0 (2) 1

(3) -1 (4) i

12. Conjugate of $3 + 4i$ is :

(1) $-3 - 4i$ (2) $3 - 4i$

(3) $-3 + 4i$ (4) $3 + 4i$

13. Modulus of $z = 6 - 8i$:

(1) 10 (2) 14

(3) $\sqrt{10}$ (4) 2

14. Product of a complex number and its conjugate is :

(1) Imaginary (2) Zero

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15. The value of $(1 + i)^2$ is :

(1) $1 + 2i$ (2) 0

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16. The transpose of matrix A is obtained by :

(1) Multiplying A by scalar (2) Reversing rows

(3) Interchanging rows and columns (4) Taking inverse

17. In binomial expansion, the number of terms in $(x + y)^n$ is :

(1) n (2) n + 1

(3) 2n (4) Infinite

18. Middle term in the expansion of $(x + y)^{10}$ is :

(1) 5th (2) 6th

(3) 7th (4) 10th

19. Coefficient of x^3 in $(1 + x)^5$ is :

(1) 5 (2) 15

(3) 20 (4) 10

20. A matrix with only one row is called :

(1) Column matrix (2) Scalar matrix

(3) Row matrix (4) Square matrix

21. $\lim_{x \to 0} \frac{\sin x}{x}$ is equal to :

(1) 1 (2) 0

(3) ∞ (4) Does not exist

22. Which law holds for limits ?

(1) Limit of product = product of limits (2) Limit of sum = difference of limits

(3) Limit of quotient = product of limits (4) Limit of constant = 0

23. if $\lim_{x \to a} f(x)$ exists, them $f(x)$ must be :

(1) Continuous at $x = a$

(2) Defined at $x = a$

(3) Both left and right limits exist and are equal

(4) Differentiable

24. Derivative of x^3 is :

(1) $3x$ (2) $3x^2$

(3) x^2 (4) $3x^3$

25. If $f(x) = \sin x$, them $f'(x) =$

(1) $\cos x$ (2) $-\cos x$

(3) $\sin x$ (4) $-\sin x$

26. Derivative of a constant is :

(1) 0 (2) 1

(3) Undefined (4) Constant

27. The product rule of derivatives is :
(1) $f.g'$ (2) $f'g + fg'$
(3) $f'.g'$ (4) $f + g$

28. Derivative of $\tan x$ is :
(1) $\sec^2 x$ (2) $\cos^2 x$
(3) $\sin x$ (4) $\sec x$

29. If $y = x^2 \cos x$, them the derivative is :
(1) $2x \cos x - x^2 \sin x$ (2) $x^2 \sin x$
(3) $x \cos x$ (4) $2x \sin x$

30. The derivative of $\log x$ is :
(1) 1 (2) $\frac{1}{x}$
(3) $\log x$ (4) e^x

31. Which function is ***not*** differentiable at $x = 0$?
(1) $|x|$ (2) x^2
(3) $\sin x$ (4) x^3

32. Discontinuity occurs when :
(1) Left and right limits are equal (2) f (a) is not defined
(3) Left and right limits are not equal (4) Function is constant

33. If a function is differentiable at $x = a$, it is also :
(1) Discontinuous (2) Continuous
(3) Constant (4) None

34. If $f(x) = |x|$, then $f(x)$ is :
(1) Differentiable everywhere
(2) Not continuous
(3) Continuous but not differentiable at $x = 0$
(4) Discontinuous at $x = 0$

35. The derivative of a^x is :
(1) $a^x \ln a$ (2) $\ln a$
(3) $a \ln x$ (4) x^a

36. The derivative of $ln(x^2)$ is :

(1) $\frac{1}{x^2}$ (2) $\frac{2}{x}$

(3) $x\ ln\ x$ (4) $ln\ x$

37. Mean Value Theorem is applicable when :

(1) Function is discontinuous

(2) Function is differentiable only

(3) Function is continuous on [a, b] and differentiable on (a, b)

(4) Function is constant

38. Maximum/minimum value of a function occurs where :

(1) First derivative is zero (2) First derivative is one

(3) Second derivative is zero (4) Function is linear

39. The integral of e^x is :

(1) e (2) $e^x + c$

(3) x (4) $ln\ x$

40. General solution of $\frac{dy}{dx} = ky$ is :

(1) $y = kx$ (2) $y = ce^{kx}$

(3) $y = \log x$ (4) $y = k^x$

41. If ₹1,000 amounts to ₹1,210 in 2 years at compound interest, what is the rate ?

(1) 10% (2) 11%

(3) 5% (4) 18%

42. What will be next number in the series 3, 6, 18, 72 ?

(1) 144 (2) 216

(3) 360 (4) 432

43. If CAT = 24 and DOG = 26, then what is the code for RAT ?

(1) 35 (2) 36

(3) 38 (4) 40

44. In a certain code, 'FISH' is written as 'HUKV'. How is 'BIRD' written ?

(1) DJTF (2) EKSG

(3) DKTF (4) EJSF

45. What is the value of $5 + 3 \times 2 - 4 \div 2$?

(1) 10 (2) 9

(3) 11 (4) 8

46. A sum of ₹5,000 is invested at 10% per annum simle interest. What is the interest after 3 years ?

(1) ₹1,500 (2) ₹1,000

(3) ₹2,000 (4) ₹1,200

47. If one face of a cube is red, the opposite face is blue, and adjacent faces are green, yellow, white, and black. What color is opposite to green ?

(1) Red (2) Blue

(3) White (4) Yellow

48. LCM of 12 and 18 is :

(1) 72 (2) 36

(3) 24 (4) 18

49. Aman walks 10 m North, then turns right and walks 5 m, then turns right again and walks 10 m. In which direction is he now from the starting point ?

(1) East (2) West

(3) North (4) South

50. If South-East becomes North, what will North-East become ?

(1) East (2) West

(3) South (4) South-West

51. Which letter does ***not*** change in mirror image ?

(1) P (2) B

(3) H (4) R

52. A can do a piece of work in 10 days, B in 15 days. In how many days will they complete it together ?
(1) 6 (2) 5
(3) 8 (4) 12

53. A train 120 meters long takes 10 seconds to cross a man walking at 6 km/h in opposite direction. Find the speed of the train :
(1) 48 km/h (2) 54 km/h
(3) 60 km/h (4) 66 km/h

54. Clock : Time :: Thermometer : ?
(1) Mercury (2) Heat
(3) Temperature (4) Degree

55. Pointing to a boy, Maya said, "He is the son of my grandfather's only son." Who is the boy to Maya ?
(1) Brother (2) Uncle
(3) Cousin (4) Nephew

56. Data collected from a published source is called :
(1) Primary data (2) Secondary data
(3) Raw data (4) Derived data

57. Qualitative data refers to :
(1) Numerical values (2) Categorical variables
(3) Frequency distributions (4) Graphs

58. Which of the following is an example of continuous data ?
(1) Number of books (2) Temperature
(3) Roll number (4) Gender

59. Histogram is used to represent :
(1) Discrete data (2) Qualitative data
(3) Continuous data (4) Time-series data

60. Frequency polygon is formed by :
(1) Using bar graph (2) Joining midpoints of class intervals
(3) Dividing bars (4) Connecting pie segments

61. Which average is affected most by extreme values ?

(1) Median
(2) Mode
(3) Mean
(4) None of them

62. The mode of the series : 5, 6, 6, 7, 8, 8, 8, 9 is :

(1) 6
(2) 7
(3) 8
(4) 9

63. The median of the series : 3, 7, 9, 10, 12 is :

(1) 7
(2) 9
(3) 10
(4) 8

64. Geometric Mean of 2 and 8 is :

(1) 5
(2) 6
(3) 4
(4) 10

65. If Arithmetic Mean = 50 and Harmonic Mean = 30, then Geometric Mean is :

(1) 38.7
(2) 40
(3) 44
(4) 45

66. If all values in a dataset are same, then standard deviation is :

(1) Zero
(2) One
(3) Infinite
(4) Mean

67. The simplest measure of dispersion is :

(1) Standard Deviation
(2) Variance
(3) Range
(4) Mean Deviation

68. The formula for variance is :

(1) $\frac{\sum(x-\bar{x})}{n}$
(2) $\frac{\sum(x-\bar{x})^2}{n}$
(3) $\frac{\sum(x-\bar{x})^2}{n^2}$
(4) $\frac{\sum(x-\bar{x})^2}{n+1}$

69. Standard deviation is always :

(1) Negative
(2) Zero
(3) Positive or zero
(4) Undefined

70. Which relation is always ***true*** ?

(1) A.M. < G.M.
(2) H.M. > A.M. > G.M.
(3) G.M. > A.M.
(4) A.M. > G.M. > H.M.

71. If A.M. = G.M., then :

(1) All values are same
(2) All values are different
(3) Values are zero
(4) Data is skewed

72. Pie charts use angles summing to :

(1) 360°
(2) 100°
(3) 180°
(4) 270°

73. Which measure best represents skewed data ?

(1) Mean
(2) Mode
(3) Median
(4) Range

74. If mean is greater than median, the distribution is :

(1) Symmetrical
(2) Normal
(3) Negatively skewed
(4) Positively skewed

75. Which of the following best describes grouped data ?

(1) Raw data
(2) Data organized in class intervals
(3) Unclassified data
(4) Tabulated numerical facts

76. Primary data is collected through :

(1) Newspapers
(2) Journals
(3) Direct observation or survey
(4) Text books

77. Geometric mean is applicable only when all values are :

(1) Positive
(2) Integer
(3) Equal
(4) Less than 100

78. For the data : 10, 20, 30, 40, 50, the Arithmetic Mean is :

(1) 25
(2) 30
(3) 35
(4) 40

79. The unit of variance is :

(1) Same as mean
(2) Square of unit of observation
(3) No unit
(4) Reciprocal of standard deviation

80. Cumulative frequency graph is also known as :

(1) Histogram
(2) Bar Graph
(3) Pie chart
(4) Ogive

81. The number of permutations of 5 distinct objects taken 3 at a time is :

(1) 60
(2) 10
(3) 20
(4) 15

82. Number of ways to arrange the letters in the word "STATISTICS" is :

(1) 50400
(2) 5040
(3) 10080
(4) 3628800

83. The number of combinations of 7 items taken 3 at a time is :

(1) 35
(2) 42
(3) 21
(4) 14

84. How many 3-digit numbers can be formed using digits 1 to 5 without repetition ?

(1) 20
(2) 125
(3) 100
(4) 60

85. In how many ways can 3 boys and 2 girls be selected from 5 boys and 4 girls ?

(1) 20
(2) 30
(3) 40
(4) 10

86. The probability of an impossible event is :

(1) 1
(2) 0
(3) Between 0 and 1
(4) Not defined

87. A die is thrown once. The probability of getting an even number is :

(1) 1/2
(2) 1/3
(3) 1/6
(4) 2/3

88. The total number of outcomes when two coins are tossed is :
(1) 4 (2) 3
(3) 2 (4) 6

89. If P(A) 0.6 and P(B) = 0.3, then maximum value of $P(A \cap B)$ is :
(1) 0.9 (2) 0.3
(3) 0.6 (4) 1

90. If two events cannot happen together, they are :
(1) Independent (2) Complementary
(3) Mutually exclusive (4) Equally likely

91. If A and B are independent, then $P(A \cap B)$ =
(1) P(A) + P(B) (2) P(A) – P(B)
(3) P(A) × P(B) (4) None

92. If A and B are mutually exclusive, then $P(A \cap B)$ =
(1) 1 (2) 0
(3) P(A) (4) P(B)

93. In axiomatic probability, the value of any probability lies between :
(1) 0 and ∞ (2) –1 and 1
(3) 0 and 1 (4) $-\infty$ and $+\infty$

94. If P(A|B) is defined, then :
(1) P(B) = 0 (2) $P(B) \neq 0$
(3) $P(A \cup B) = 0$ (4) A and B are mutually exclusive

95. If A and B are independent, then P(A|B) =
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(3) $P(A \cap B)$ (4) P(B|A)

96. $P(A \cup B) = P(A) + P(B) - ?$
(1) P(B) (2) $P(A \cap B)$
(3) $P(A \cup B)$ (4) P(A|B)

97. In Bernoulli distribution, the variance is :

(1) p (2) q

(3) pq (4) p/q

98. The binomial distribution has parameters :

(1) n and p (2) μ and σ

(3) Mean and variance (4) n and q

99. Which of the following is ***not*** a property of binomial distribution ?

(1) Fixed number of trials (2) Independent trials

(3) Constant probability of success (4) Continuous outcomes

100. If $p = 0.5$ and $n = 4$, then $P(X = 2)$ in binomial distribution is :

(1) 3/8 (2) 6/16

(3) 1/4 (4) 5/16

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   (2) 30
   (3) 35
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(2) Not continuous

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(1) $P(A) + P(B)$ (2) $P(A) - P(B)$
(3) $P(A) \times P(B)$ (4) None

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45. If A and B are independent, then P(A|B) =

(1) P(A) (2) P(B)

(3) $P(A \cap B)$ (4) P(B|A)

46. $P(A \cup B) = P(A) + P(B) - ?$

(1) P(B) (2) $P(A \cap B)$

(3) $P(A \cup B)$ (4) P(A|B)

47. In Bernoulli distribution, the variance is :

(1) p (2) q

(3) pq (4) p/q

48. The binomial distribution has parameters :

(1) n and p (2) μ and σ

(3) Mean and variance (4) n and q

49. Which of the following is ***not*** a property of binomial distribution ?

(1) Fixed number of trials (2) Independent trials

(3) Constant probability of success (4) Continuous outcomes

50. If $p = 0.5$ and $n = 4$, then $P(X = 2)$ in binomial distribution is :

(1) 3/8 (2) 6/16

(3) 1/4 (4) 5/16

51. Which average is affected most by extreme values ?

(1) Median (2) Mode

(3) Mean (4) None of them

52. The mode of the series : 5, 6, 6, 7, 8, 8, 8, 9 is :

(1) 6 (2) 7

(3) 8 (4) 9

53. The median of the series : 3, 7, 9, 10, 12 is :

(1) 7 (2) 9

(3) 10 (4) 8

54. Geometric Mean of 2 and 8 is :

(1) 5 (2) 6

(3) 4 (4) 10

55. If Arithmetic Mean = 50 and Harmonic Mean = 30, then Geometric Mean is :

(1) 38.7 (2) 40

(3) 44 (4) 45

56. If all values in a dataset are same, then standard deviation is :

(1) Zero (2) One

(3) Infinite (4) Mean

57. The simplest measure of dispersion is :

(1) Standard Deviation (2) Variance

(3) Range (4) Mean Deviation

58. The formula for variance is :

(1) $\frac{\sum(x-\bar{x})}{n}$ (2) $\frac{\sum(x-\bar{x})^2}{n}$

(3) $\frac{\sum(x-\bar{x})^2}{n^2}$ (4) $\frac{\sum(x-\bar{x})^2}{n+1}$

59. Standard deviation is always :

(1) Negative (2) Zero

(3) Positive or zero (4) Undefined

60. Which relation is always ***true*** ?

(1) A.M. < G.M. (2) H.M. > A.M. > G.M.

(3) G.M. > A.M. (4) A.M. > G.M. > H.M.

61. The number of permutations of 5 distinct objects taken 3 at a time is :

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(3) 20 (4) 15

62. Number of ways to arrange the letters in the word "STATISTICS" is :

(1) 50400 (2) 5040

(3) 10080 (4) 3628800

63. The number of combinations of 7 items taken 3 at a time is :

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(3) 21 (4) 14

64. How many 3-digit numbers can be formed using digits 1 to 5 without repetition ?

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(3) 100 (4) 60

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(1) 1 (2) 0

(3) Between 0 and 1 (4) Not defined

67. A die is thrown once. The probability of getting an even number is :

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(3) 1/6 (4) 2/3

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(1) 4 (2) 3

(3) 2 (4) 6

69. If P(A) 0.6 and P(B) = 0.3, then maximum value of $P(A \cap B)$ is :

(1) 0.9 (2) 0.3

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76. A sum of ₹5,000 is invested at 10% per annum simle interest. What is the interest after 3 years ?
(1) ₹1,500 (2) ₹1,000
(3) ₹2,000 (4) ₹1,200

77. If one face of a cube is red, the opposite face is blue, and adjacent faces are green, yellow, white, and black. What color is opposite to green ?
(1) Red (2) Blue
(3) White (4) Yellow

78. LCM of 12 and 18 is :

(1) 72 (2) 36

(3) 24 (4) 18

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(1) Continuous at $x = a$

(2) Defined at $x = a$

(3) Both left and right limits exist and are equal

(4) Differentiable

84. Derivative of x^3 is :

(1) $3x$ (2) $3x^2$

(3) x^2 (4) $3x^3$

85. If $f(x) = \sin x$, them $f'(x) =$

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86. Derivative of a constant is :

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87. The product rule of derivatives is :

(1) $f.g'$ (2) $fg + fg'$

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(1) $\sec^2 x$ (2) $\cos^2 x$

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89. If $y = x^2 \cos x$, them the derivative is :

(1) $2x \cos x - x^2 \sin x$ (2) $x^2 \sin x$

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90. The derivative of $\log x$ is :

(1) 1 (2) $\frac{1}{x}$

(3) $\log x$ (4) e^x

91. Which of the following is a null set ?

(1) $\{0\}$ (2) $\{x : x^2 = -1\}$

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92. The power set of a set with 3 elements contains :

(1) 6 subsets (2) 4 subsets

(3) 9 subsets (4) 8 subsets

93. Common ratio of GP : 3, 6, 12, 24 ..... is :

(1) 2 (2) 3

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94. The composition of functions $f : A \to B$ and $g : B \to C$ is defined as :

(1) f o g (2) g o f

(3) f + g (4) g + f

95. Sum of first 5 terms of GP : 1, 2, 4, 8, ... is :

(1) 31 (2) 30

(3) 32 (4) 15

96. The value of sin (90°) is :

(1) –1 (2) 0

(3) 1 (4) Undefined

97. The principal value of $\sin^{-1}(1)$ is :

(1) π (2) $\pi/4$

(3) 0 (4) $\pi/2$

98. Thenth term of AP is given by :

(1) a – (n–1) d (2) a + (n–1) d

(3) a (n – d) (4) nd

99. Which identity is ***correct*** ?

(1) $\sin^2 x + \cos^2 x = 1$ (2) $\tan^2 x + 1 = \sec x$

(3) $\sec x . \cot x = 1$ (4) $\sin x = \cot x$

100. If $\tan A = \frac{3}{4}$, then sec A is :

(1) 5/4 (2) 4/5

(3) 5/3 (4) 5/6

Total No. of Printed Pages : 13

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C

SET-Y

UG-4Yr.EE-June, 2025

SUBJECT : B.Sc.-Statistics

Sr. No. .....10079....

Time : **1¼ Hours** Max. Marks : **100** Total Questions : **100**

Roll No. (in figures)_____ (in words) _____

Name _____ Date of Birth_____

Father's Name _____ Mother's Name _____

Date of Examination _____

_____ _____

(Signature of the Candidate) (Signature of the Invigilator)

CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

1. ***All questions are compulsory.***
2. The candidates ***must return*** the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
4. Question Booklet along with answer key of all the A, B, C & D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University Website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case, will be considered.
5. The candidate ***must not*** do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers ***must not*** be ticked in the question booklet.
6. ***There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.***
7. Use only **Black** or **Blue Ball Point Pen** of good quality in the OMR Answer-Sheet.
8. *Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained* **30** *minutes after starting of the examination.*

1. If ₹1,000 amounts to ₹1,210 in 2 years at compound interest, what is the rate ?
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(1) 5/4 (2) 4/5

(3) 5/3 (4) 5/6

31. If A and B are independent, then P (A ∩ B) =

(1) P(A) + P(B) (2) P(A) – P(B)

(3) P(A) × P(B) (4) None

32. If A and B are mutually exclusive, then P(A ∩ B) =

(1) 1 (2) 0

(3) P(A) (4) P(B)

33. In axiomatic probability, the value of any probability lies between :

(1) 0 and ∞ (2) –1 and 1

(3) 0 and 1 (4) $-\infty$ and $+\infty$

34. If P(A|B) is defined, then :

(1) P(B) = 0 (2) P(B) ≠ 0

(3) P(A ∪ B) = 0 (4) A and B are mutually exclusive

35. If A and B are independent, then P(A|B) =

(1) P(A) (2) P(B)

(3) $P(A \cap B)$ (4) P(B|A)

36. $P(A \cup B) = P(A) + P(B) - ?$

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(1) A.M. < G.M. (2) H.M. > A.M. > G.M.

(3) G.M. > A.M. (4) A.M. > G.M. > H.M.

51. Which function is ***not*** differentiable at $x = 0$?

(1) $|x|$ (2) x^2

(3) $\sin x$ (4) x^3

52. Discontinuity occurs when :

(1) Left and right limits are equal (2) f (a) is not defined

(3) Left and right limits are not equal (4) Function is constant

53. If a function is differentiable at $x = a$, it is also :

(1) Discontinuous (2) Continuous

(3) Constant (4) None

54. If $f(x) = |x|$, then $f(x)$ is :

(1) Differentiable everywhere

(2) Not continuous

(3) Continuous but not differentiable at $x = 0$

(4) Discontinuous at $x = 0$

55. The derivative of a^x is :

(1) $a^x \ln a$ (2) $\ln a$

(3) $a \ln x$ (4) x^a

56. The derivative of $\ln(x^2)$ is :

(1) $\frac{1}{x^2}$ (2) $\frac{2}{x}$

(3) $x \ln x$ (4) $\ln x$

57. Mean Value Theorem is applicable when :

(1) Function is discontinuous

(2) Function is differentiable only

(3) Function is continuous on [a, b] and differentiable on (a, b)

(4) Function is constant

58. Maximum/minimum value of a function occurs where :

(1) First derivative is zero (2) First derivative is one

(3) Second derivative is zero (4) Function is linear

59. The integral of e^x is :

(1) e (2) $e^x + c$

(3) x (4) $\ln x$

60. General solution of $\frac{dy}{dx} = ky$ is :

(1) $y = kx$ (2) $y = ce^{kx}$

(3) $y = \log x$ (4) $y = k^x$

61. If A.M. = G.M., then :

(1) All values are same
(2) All values are different
(3) Values are zero
(4) Data is skewed

62. Pie charts use angles summing to :

(1) 360°
(2) 100°
(3) 180°
(4) 270°

63. Which measure best represents skewed data ?

(1) Mean
(2) Mode
(3) Median
(4) Range

64. If mean is greater than median, the distribution is :

(1) Symmetrical
(2) Normal
(3) Negatively skewed
(4) Positively skewed

65. Which of the following best describes grouped data ?

(1) Raw data
(2) Data organized in class intervals
(3) Unclassified data
(4) Tabulated numerical facts

66. Primary data is collected through :

(1) Newspapers
(2) Journals
(3) Direct observation or survey
(4) Text books

67. Geometric mean is applicable only when all values are :

(1) Positive
(2) Integer
(3) Equal
(4) Less than 100

68. For the data : 10, 20, 30, 40, 50, the Arithmetic Mean is :

(1) 25
(2) 30
(3) 35
(4) 40

69. The unit of variance is :

(1) Same as mean
(2) Square of unit of observation
(3) No unit
(4) Reciprocal of standard deviation

70. Cumulative frequency graph is also known as :

(1) Histogram (2) Bar Graph

(3) Pie chart (4) Ogive

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80. If two events cannot happen together, they are :

(1) Independent (2) Complementary

(3) Mutually exclusive (4) Equally likely

81. The square of imaginary number 'i' is :

(1) 0 (2) 1

(3) -1 (4) i

82. Conjugate of $3 + 4i$ is :

(1) $-3 - 4i$ (2) $3 - 4i$

(3) $-3 + 4i$ (4) $3 + 4i$

83. Modulus of $z = 6 - 8i$:

(1) 10 (2) 14

(3) $\sqrt{10}$ (4) 2

84. Product of a complex number and its conjugate is :

(1) Imaginary (2) Zero

(3) Real and positive (4) Undefined

85. The value of $(1 + i)^2$ is :

(1) $1 + 2i$ (2) 0

(3) 2 (4) $2i$

86. The transpose of matrix A is obtained by :

(1) Multiplying A by scalar (2) Reversing rows

(3) Interchanging rows and columns (4) Taking inverse

87. In binomial expansion, the number of terms in $(x + y)^n$ is :

(1) n (2) n + 1

(3) 2n (4) Infinite

88. Middle term in the expansion of $(x + y)^{10}$ is :

(1) 5th
(2) 6th
(3) 7th
(4) 10th

89. Coefficient of x^3 in $(1 + x)^5$ is :

(1) 5
(2) 15
(3) 20
(4) 10

90. A matrix with only one row is called :

(1) Column matrix
(2) Scalar matrix
(3) Row matrix
(4) Square matrix

91. Which letter does ***not*** change in mirror image ?

(1) P
(2) B
(3) H
(4) R

92. A can do a piece of work in 10 days, B in 15 days. In how many days will they complete it together ?

(1) 6
(2) 5
(3) 8
(4) 12

93. A train 120 meters long takes 10 seconds to cross a man walking at 6 km/h in opposite direction. Find the speed of the train :

(1) 48 km/h
(2) 54 km/h
(3) 60 km/h
(4) 66 km/h

94. Clock : Time :: Thermometer : ?

(1) Mercury
(2) Heat
(3) Temperature
(4) Degree

95. Pointing to a boy, Maya said, "He is the son of my grandfather's only son." Who is the boy to Maya ?

(1) Brother
(2) Uncle
(3) Cousin
(4) Nephew

96. Data collected from a published source is called :

(1) Primary data (2) Secondary data

(3) Raw data (4) Derived data

97. Qualitative data refers to :

(1) Numerical values (2) Categorical variables

(3) Frequency distributions (4) Graphs

98. Which of the following is an example of continuous data ?

(1) Number of books (2) Temperature

(3) Roll number (4) Gender

99. Histogram is used to represent :

(1) Discrete data (2) Qualitative data

(3) Continuous data (4) Time-series data

100. Frequency polygon is formed by :

(1) Using bar graph (2) Joining midpoints of class intervals

(3) Dividing bars (4) Connecting pie segments

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SET-Y

UG-4Yr.EE-June, 2025

SUBJECT : B.Sc.-Statistics

Sr. No. .....10080...

Time : **1¼ Hours** Max. Marks : **100** Total Questions : **100**

Roll No. (in figures)_____ (in words) _____

Name _____ Date of Birth_____

Father's Name _____ Mother's Name _____

Date of Examination _____

_____ _____

(Signature of the Candidate) (Signature of the Invigilator)

CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

1. ***All questions are compulsory.***
2. The candidates ***must return*** the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
4. Question Booklet along with answer key of all the A, B, C & D code shall be got uploaded on the University Website immediately after the conduct of Entrance Examination. Candidates may raise valid objection/complaint if any, with regard to discrepancy in the question booklet/answer key within 24 hours of uploading the same on the University Website. The complaint be sent by the students to the Controller of Examinations by hand or through email. Thereafter, no complaint in any case, will be considered.
5. The candidate ***must not*** do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers ***must not*** be ticked in the question booklet.
6. ***There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.***
7. Use only **Black** or **Blue Ball Point Pen** of good quality in the OMR Answer-Sheet.
8. *Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained* **30** *minutes after starting of the examination.*

1. The square of imaginary number 'i' is :
   (1) 0 (2) 1
   (3) -1 (4) i

2. Conjugate of $3 + 4i$ is :
   (1) $-3 - 4i$ (2) $3 - 4i$
   (3) $-3 + 4i$ (4) $3 + 4i$

3. Modulus of $z = 6 - 8i$:
   (1) 10 (2) 14
   (3) $\sqrt{10}$ (4) 2

4. Product of a complex number and its conjugate is :
   (1) Imaginary (2) Zero
   (3) Real and positive (4) Undefined

5. The value of $(1 + i)^2$ is :
   (1) $1 + 2i$ (2) 0
   (3) 2 (4) $2i$

6. The transpose of matrix A is obtained by :
   (1) Multiplying A by scalar (2) Reversing rows
   (3) Interchanging rows and columns (4) Taking inverse

7. In binomial expansion, the number of terms in $(x + y)^n$ is :
   (1) n (2) n + 1
   (3) 2n (4) Infinite

8. Middle term in the expansion of $(x + y)^{10}$ is :
   (1) 5th (2) 6th
   (3) 7th (4) 10th

9. Coefficient of x^3 in $(1 + x)^5$ is :
   (1) 5 (2) 15
   (3) 20 (4) 10

10. A matrix with only one row is called :

(1) Column matrix (2) Scalar matrix

(3) Row matrix (4) Square matrix

11. If A and B are independent, then $P(A \cap B) =$

(1) $P(A) + P(B)$ (2) $P(A) - P(B)$

(3) $P(A) \times P(B)$ (4) None

12. If A and B are mutually exclusive, then $P(A \cap B) =$

(1) 1 (2) 0

(3) P(A) (4) P(B)

13. In axiomatic probability, the value of any probability lies between :

(1) 0 and ∞ (2) -1 and 1

(3) 0 and 1 (4) $-\infty$ and $+\infty$

14. If P(A|B) is defined, then :

(1) $P(B) = 0$ (2) $P(B) \neq 0$

(3) $P(A \cup B) = 0$ (4) A and B are mutually exclusive

15. If A and B are independent, then P(A|B) =

(1) P(A) (2) P(B)

(3) $P(A \cap B)$ (4) P(B|A)

16. $P(A \cup B) = P(A) + P(B) - ?$

(1) P(B) (2) $P(A \cap B)$

(3) $P(A \cup B)$ (4) P(A|B)

17. In Bernoulli distribution, the variance is :

(1) p (2) q

(3) pq (4) p/q

18. The binomial distribution has parameters :

(1) n and p (2) μ and σ

(3) Mean and variance (4) n and q

19. Which of the following is ***not*** a property of binomial distribution ?
(1) Fixed number of trials
(2) Independent trials
(3) Constant probability of success
(4) Continuous outcomes

20. If $p = 0.5$ and $n = 4$, then $P(X = 2)$ in binomial distribution is :
(1) 3/8
(2) 6/16
(3) 1/4
(4) 5/16

21. If A.M. = G.M., then :
(1) All values are same
(2) All values are different
(3) Values are zero
(4) Data is skewed

22. Pie charts use angles summing to :
(1) 360°
(2) 100°
(3) 180°
(4) 270°

23. Which measure best represents skewed data ?
(1) Mean
(2) Mode
(3) Median
(4) Range

24. If mean is greater than median, the distribution is :
(1) Symmetrical
(2) Normal
(3) Negatively skewed
(4) Positively skewed

25. Which of the following best describes grouped data ?
(1) Raw data
(2) Data organized in class intervals
(3) Unclassified data
(4) Tabulated numerical facts

26. Primary data is collected through :
(1) Newspapers
(2) Journals
(3) Direct observation or survey
(4) Text books

27. Geometric mean is applicable only when all values are :
(1) Positive
(2) Integer
(3) Equal
(4) Less than 100

28. For the data : 10, 20, 30, 40, 50, the Arithmetic Mean is :

(1) 25 (2) 30

(3) 35 (4) 40

29. The unit of variance is :

(1) Same as mean (2) Square of unit of observation

(3) No unit (4) Reciprocal of standard deviation

30. Cumulative frequency graph is also known as :

(1) Histogram (2) Bar Graph

(3) Pie chart (4) Ogive

31. Which letter does ***not*** change in mirror image ?

(1) P (2) B

(3) H (4) R

32. A can do a piece of work in 10 days, B in 15 days. In how many days will they complete it together ?

(1) 6 (2) 5

(3) 8 (4) 12

33. A train 120 meters long takes 10 seconds to cross a man walking at 6 km/h in opposite direction. Find the speed of the train :

(1) 48 km/h (2) 54 km/h

(3) 60 km/h (4) 66 km/h

34. Clock : Time :: Thermometer : ?

(1) Mercury (2) Heat

(3) Temperature (4) Degree

35. Pointing to a boy, Maya said, "He is the son of my grandfather's only son." Who is the boy to Maya ?

(1) Brother (2) Uncle

(3) Cousin (4) Nephew

36. Data collected from a published source is called :
(1) Primary data
(2) Secondary data
(3) Raw data
(4) Derived data

37. Qualitative data refers to :
(1) Numerical values
(2) Categorical variables
(3) Frequency distributions
(4) Graphs

38. Which of the following is an example of continuous data ?
(1) Number of books
(2) Temperature
(3) Roll number
(4) Gender

39. Histogram is used to represent :
(1) Discrete data
(2) Qualitative data
(3) Continuous data
(4) Time-series data

40. Frequency polygon is formed by :
(1) Using bar graph
(2) Joining midpoints of class intervals
(3) Dividing bars
(4) Connecting pie segments

41. Which function is ***not*** differentiable at $x = 0$?
(1) $|x|$
(2) x^2
(3) $\sin x$
(4) x^3

42. Discontinuity occurs when :
(1) Left and right limits are equal
(2) f (a) is not defined
(3) Left and right limits are not equal
(4) Function is constant

43. If a function is differentiable at $x = a$, it is also :
(1) Discontinuous
(2) Continuous
(3) Constant
(4) None

44. If $f(x) = |x|$, then $f(x)$ is :
(1) Differentiable everywhere
(2) Not continuous
(3) Continuous but not differentiable at $x = 0$
(4) Discontinuous at $x = 0$

45. The derivative of a^x is :

(1) $a^x \ln a$ (2) $\ln a$

(3) $a \ln x$ (4) x^a

46. The derivative of $\ln(x^2)$ is :

(1) $\frac{1}{x^2}$ (2) $\frac{2}{x}$

(3) $x \ln x$ (4) $\ln x$

47. Mean Value Theorem is applicable when :

(1) Function is discontinuous

(2) Function is differentiable only

(3) Function is continuous on [a, b] and differentiable on (a, b)

(4) Function is constant

48. Maximum/minimum value of a function occurs where :

(1) First derivative is zero (2) First derivative is one

(3) Second derivative is zero (4) Function is linear

49. The integral of e^x is :

(1) e (2) $e^x + c$

(3) x (4) $\ln x$

50. General solution of $\frac{dy}{dx} = ky$ is :

(1) $y = kx$ (2) $y = ce^{kx}$

(3) $y = \log x$ (4) $y = k^x$

51. $\lim_{x \to 0} \frac{\sin x}{x}$ is equal to :

(1) 1 (2) 0

(3) ∞ (4) Does not exist

52. Which law holds for limits ?

(1) Limit of product = product of limits (2) Limit of sum = difference of limits

(3) Limit of quotient = product of limits (4) Limit of constant = 0

53. if $\lim_{x \to a} f(x)$ exists, them $f(x)$ must be :

(1) Continuous at $x = a$

(2) Defined at $x = a$

(3) Both left and right limits exist and are equal

(4) Differentiable

54. Derivative of x^3 is :

(1) $3x$ (2) $3x^2$

(3) x^2 (4) $3x^3$

55. If $f(x) = \sin x$, them $f'(x) =$

(1) $\cos x$ (2) $-\cos x$

(3) $\sin x$ (4) $-\sin x$

56. Derivative of a constant is :

(1) 0 (2) 1

(3) Undefined (4) Constant

57. The product rule of derivatives is :

(1) $f.g'$ (2) $f'g + f\,g'$

(3) $f'.g'$ (4) $f + g$

58. Derivative of $\tan x$ is :

(1) $\sec^2 x$ (2) $\cos^2 x$

(3) $\sin x$ (4) $\sec x$

59. If $y = x^2 \cos x$, them the derivative is :

(1) $2x \cos x - x^2 \sin x$ (2) $x^2 \sin x$

(3) $x \cos x$ (4) $2x \sin x$

60. The derivative of $\log x$ is :

(1) 1 (2) $\frac{1}{x}$

(3) $\log x$ (4) e^x

61. If ₹1,000 amounts to ₹1,210 in 2 years at compound interest, what is the rate ?

(1) 10% (2) 11%

(3) 5% (4) 18%

62. What will be next number in the series 3, 6, 18, 72 ?

(1) 144 (2) 216

(3) 360 (4) 432

63. If CAT = 24 and DOG = 26, then what is the code for RAT ?

(1) 35 (2) 36

(3) 38 (4) 40

64. In a certain code, 'FISH' is written as 'HUKV'. How is 'BIRD' written ?

(1) DJTF (2) EKSG

(3) DKTF (4) EJSF

65. What is the value of $5 + 3 \times 2 - 4 \div 2$?

(1) 10 (2) 9

(3) 11 (4) 8

66. A sum of ₹5,000 is invested at 10% per annum simle interest. What is the interest after 3 years ?

(1) ₹1,500 (2) ₹1,000

(3) ₹2,000 (4) ₹1,200

67. If one face of a cube is red, the opposite face is blue, and adjacent faces are green, yellow, white, and black. What color is opposite to green ?

(1) Red (2) Blue

(3) White (4) Yellow

68. LCM of 12 and 18 is :

(1) 72 (2) 36

(3) 24 (4) 18

69. Aman walks 10 m North, then turns right and walks 5 m, then turns right again and walks 10 m. In which direction is he now from the starting point ?

(1) East (2) West

(3) North (4) South

70. If South-East becomes North, what will North-East become ?

(1) East (2) West

(3) South (4) South-West

71. Which average is affected most by extreme values ?

(1) Median (2) Mode

(3) Mean (4) None of them

72. The mode of the series : 5, 6, 6, 7, 8, 8, 8, 9 is :

(1) 6 (2) 7

(3) 8 (4) 9

73. The median of the series : 3, 7, 9, 10, 12 is :

(1) 7 (2) 9

(3) 10 (4) 8

74. Geometric Mean of 2 and 8 is :

(1) 5 (2) 6

(3) 4 (4) 10

75. If Arithmetic Mean = 50 and Harmonic Mean = 30, then Geometric Mean is :

(1) 38.7 (2) 40

(3) 44 (4) 45

76. If all values in a dataset are same, then standard deviation is :

(1) Zero (2) One

(3) Infinite (4) Mean

77. The simplest measure of dispersion is :

(1) Standard Deviation (2) Variance

(3) Range (4) Mean Deviation

78. The formula for variance is :

(1) $\frac{\sum(x-\bar{x})}{n}$ (2) $\frac{\sum(x-\bar{x})^2}{n}$

(3) $\frac{\sum(x-\bar{x})^2}{n^2}$ (4) $\frac{\sum(x-\bar{x})^2}{n+1}$

79. Standard deviation is always :

(1) Negative (2) Zero

(3) Positive or zero (4) Undefined

80. Which relation is always ***true*** ?

(1) A.M. < G.M. (2) H.M. > A.M. > G.M.

(3) G.M. > A.M. (4) A.M. > G.M. > H.M.

81. Which of the following is a null set ?

(1) {0} (2) $\{x : x^2 = -1\}$

(3) $\{x : x > 2\}$ (4) {2, 4, 6}

82. The power set of a set with 3 elements contains :

(1) 6 subsets (2) 4 subsets

(3) 9 subsets (4) 8 subsets

83. Common ratio of GP : 3, 6, 12, 24 ..... is :

(1) 2 (2) 3

(3) 1 (4) 6

84. The composition of functions $f : A \to B$ and $g : B \to C$ is defined as :

(1) f o g (2) g o f

(3) f + g (4) g + f

85. Sum of first 5 terms of GP : 1, 2, 4, 8, ... is :

(1) 31 (2) 30

(3) 32 (4) 15

86. The value of sin (90°) is :

(1) –1
(2) 0
(3) 1
(4) Undefined

87. The principal value of $\sin^{-1}(1)$ is :

(1) π
(2) $\pi/4$
(3) 0
(4) $\pi/2$

88. Thenth term of AP is given by :

(1) a – (n–1) d
(2) a + (n–1) d
(3) a (n – d)
(4) nd

89. Which identity is ***correct*** ?

(1) $\sin^2 x + \cos^2 x = 1$
(2) $\tan^2 x + 1 = \sec x$
(3) $\sec x . \cot x = 1$
(4) $\sin x = \cot x$

90. If $\tan A = \frac{3}{4}$, then sec A is :

(1) 5/4
(2) 4/5
(3) 5/3
(4) 5/6

91. The number of permutations of 5 distinct objects taken 3 at a time is :

(1) 60
(2) 10
(3) 20
(4) 15

92. Number of ways to arrange the letters in the word "STATISTICS" is :

(1) 50400
(2) 5040
(3) 10080
(4) 3628800

93. The number of combinations of 7 items taken 3 at a time is :

(1) 35
(2) 42
(3) 21
(4) 14

94. How many 3-digit numbers can be formed using digits 1 to 5 without repetition ?

(1) 20
(2) 125
(3) 100
(4) 60

95. In how many ways can 3 boys and 2 girls be selected from 5 boys and 4 girls ?

(1) 20 (2) 30

(3) 40 (4) 10

96. The probability of an impossible event is :

(1) 1 (2) 0

(3) Between 0 and 1 (4) Not defined

97. A die is thrown once. The probability of getting an even number is :

(1) 1/2 (2) 1/3

(3) 1/6 (4) 2/3

98. The total number of outcomes when two coins are tossed is :

(1) 4 (2) 3

(3) 2 (4) 6

99. If P(A) 0.6 and P(B) = 0.3, then maximum value of $P(A \cap B)$ is :

(1) 0.9 (2) 0.3

(3) 0.6 (4) 1

100. If two events cannot happen together, they are :

(1) Independent (2) Complementary

(3) Mutually exclusive (4) Equally likely

Answer keys of Bachelor of Science (Statistics) 4-year entrance test dated 20.06.2025				
Q. No.	A	B	C	D
1	2	1	4	3
2	4	1	4	2
3	1	3	2	1
4	2	4	1	3
5	1	2	2	4
6	1	3	1	3
7	4	1	3	2
8	2	2	2	2
9	1	2	1	4
10	1	4	2	3
11	3	3	1	3
12	2	1	1	2
13	1	1	3	3
14	3	3	2	2
15	4	1	1	1
16	3	2	1	2
17	2	2	2	3
18	2	2	1	1
19	4	3	1	4
20	3	2	2	2
21	1	1	2	1
22	1	3	4	1
23	3	2	1	3
24	2	3	2	4
25	1	1	1	2
26	1	2	1	3
27	2	3	4	1
28	1	1	2	2
29	1	2	1	2
30	2	2	1	4
31	1	3	3	3
32	3	2	2	1
33	2	1	3	1
34	3	3	2	3
35	1	4	1	1
36	2	3	2	2
37	3	2	3	2
38	1	2	1	2
39	2	4	4	3
40	2	3	2	2
41	4	3	3	1
42	4	2	3	3
43	2	3	2	2
44	1	2	3	3
45	2	1	1	1
46	1	2	1	2
47	3	3	3	3
48	2	1	2	1
49	1	4	3	2
50	2	2	4	2

20/06/2025 20/06/25 20/06/2025 20/6/25

Answer keys of Bachelor of Science (Statistics) 4-year entrance test dated 20.06.2025				
Q. No.	A	B	C	D
51	3	3	1	1
52	1	3	3	1
53	1	2	2	3
54	3	3	3	2
55	1	1	1	1
56	2	1	2	1
57	2	3	3	2
58	2	2	1	1
59	3	3	2	1
60	2	4	2	2
61	3	1	1	4
62	3	3	1	4
63	2	1	3	2
64	3	4	4	1
65	1	3	2	2
66	1	2	3	1
67	3	1	1	3
68	2	1	2	2
69	3	2	2	1
70	4	3	4	2
71	1	4	1	3
72	1	4	3	3
73	3	2	1	2
74	4	1	4	3
75	2	2	3	1
76	3	1	2	1
77	1	3	1	3
78	2	2	1	2
79	2	1	2	3
80	4	2	3	4
81	1	1	3	2
82	3	1	2	4
83	1	3	1	1
84	4	2	3	2
85	3	1	4	1
86	2	1	3	1
87	1	2	2	4
88	1	1	2	2
89	2	1	4	1
90	3	2	3	1
91	3	2	3	1
92	2	4	1	3
93	3	1	1	1
94	2	2	3	4
95	1	1	1	3
96	2	1	2	2
97	3	4	2	1
98	1	2	2	1
99	4	1	3	2
100	2	1	2	3

20/06/2025 20/6/25 20/06/2025 20/6/25