*** Choose the right answer from the given options. [1 Marks Each]** **[71]**

1. If 150 is the mean of 200 observations and 100 is the mean of some 300 other observations, find the mean of the combination:
   (A) 90 (B) 100 (C) 120 (D) 120
2. The following data has been arranged in ascending order. If their median is 63, find the value of x.34, 37, 53, 55, x, x + 2, 77, 83, 89 and 100.
   (A) 65 (B) 68 (C) 62 (D) 62
3. The mean of 100 observations is 50 and their standard deviation is 5. The sum of all squares of all the observations is:
   (A) 50,000 (B) 250,000 (C) 252500 (D) 252500
4. The sum $\sum_{r=1}^{10}\left(r^2+1\right)\times(r\,!)$ is equal to:
   (A) (11)! (B) 10 × (11)! (C) 101 × (10)! (D) 101 × (10)!
5. The daily sale of kerosene (in litres) in a ration shop for six days is as follows: 75, 120, 12, 50, 70.5 and 140.5 The average daily sale is:
   (A) 150 (B) 10 (C) 142 (D) 142
6. The mean of the cubes of the first n natural numbers is:
   (A) $\frac{n(n+1)^2}{2}$ (B) $\frac{n(n+1)^2}{4}$
   (C) $\frac{n(n+1)(n+2)}{8}$ (D) $\frac{n(n+1)(n+2)}{8}$
7. Mean of 10 values is 32.6. If another values is included the mean becomes 31. The included value is:
   (A) 16 (B) 14 (C) 15 (D) 15
8. The mean of 864, 874, 884, 1000 and 1008 is:
   (A) 928 (B) 1010 (C) 926 (D) 926
9. The attendance of a class of 45 boys for 10 days is given as 40, 30, 35, 45, 44, 41, 38, 44 and 41 then the mean attendance of a class is:
   (A) 39 (B) 40 (C) 41 (D) 41
10. The following observations have been arranged in ascending order. If the median of the data is 78, find the value of x.
    44, 47, 63, 65, x + 13, 87, 93, 99, 110.

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(A) 65 (B) 68 (C) 66 (D) 66

11. Means of a set of 60 values is 23, if 4 is added to each these values the the new mean is:

(A) 27 (B) 25 (C) 64 (D) 64

12. The mean age of 30 student is 9 years. If the age of their teacher is included, it becomes 10 years. The age of teacher (in years) is:

(A) 27 (B) 31 (C) 35 (D) 35

13. The sum of the squares deviations for 10 observations taken from their mean 50 is 250. The coefficient of variation is:

(A) 10% (B) 40% (C) 50% (D) 50%

14. In a class of 100 students there are 70 boys whose average marks in a subject are 75 If the average marks of whole class is 72 then what is the average marks of the girls?

(A) 73 (B) 65 (C) 68 (D) 68

15. Choose the correct answer.

The following information relates to a sample of size 60 $\sum x^2 = 18000$ and $\sum x = 960,$ then the variance is:

(A) 6.63 (B) 16 (C) 22 (D) 22

16. The mean deviation of the series a, a + d, a + 2d, ..., a + 2n from its mean is:

(A) $\frac{(n+1)d}{2n+1}$ (B) $\frac{nd}{2n+1}$ (C) $\frac{n(n+1)d}{2n+1}$ (D) $\frac{n(n+1)d}{2n+1}$

17. Variance of the distribution 73, 77, 81, 85, ...,113 is:

(A) 10 (B) 160 (C) 161 (D) 161

18. The average of monthly salary of fifteen employees in a company is Rs. 9450. If the supervisors salary is added, the average salary increase by Rs. 650 What is the salary of the supervisor?

(A) Rs.19,850 (B) Rs.20,050 (C) Rs. 20,250 (D) Rs. 20,250

19. Find the mean of:
9, 11, 12, 4 and 7

(A) 5.3 (B) 7.1 (C) 8.6 (D) 8.6

20. Find the mean of the first five multiples of 7.

(A) 18 (B) 20 (C) 15 (D) 15

21. A measure of central location which splits the data set into two equal groups is called the:

(A) Mean (B) Mode (C) Median (D) Median

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22. A company produces on an average 4000 items per month for the first 3 months. How many items it must produce on an average per month over the next 9 months, to average 4375 items per month over the whole?

(A) 4500 (B) 4600 (C) 4680 (D) 4680

23. Kavita obtained 16, 14, 18 and 20 marks (out of 25) in maths in weekly test in the month of Jan 2000; then mean marks of Kavita is:

(A) 18 (B) 16.5 (C) 17 (D) 17

24. The mean of the squares of the first n natural numbers is:

(A) $n^2 + 1n2 + 1$ (B) $\frac{n^4+1}{n}$

(C) $\frac{(n+1)(2n+1)}{6}$ (D) $\frac{(n+1)(2n+1)}{6}$

25. The age of 13 school students are listed below. Find the median:
12, 9, 8, 13, 15, 14, 6, 18, 7, 11, 9, 14, 10

(A) 8 (B) 14 (C) 11 (D) 11

26. Given the list of numbers {1, 6, 3, 9, 16, 11, 2, 9, 5, 712, 13, 8} what is the median?

(A) 7 (B) 8 (C) 9 (D) 9

27. The mean of 8 numbers is 25 if each number is multiplied by 2 the new mean will be:

(A) 12.5 (B) 25 (C) 40 (D) 40

28. The difference between the maximum and the minimum obervations in data is called the _____:

(A) Mean of the data (B) Range of the data (C) Mode of the data (D) Mode of the data

29. If n = 10, $\overline{X} = 12$ and $\sum x_i^2 = 1530$, then the coefficient of variation is:

(A) 36% (B) 41% (C) 25% (D) 25%

30. The mean of 9 observations is 36. If the mean of the first 5 observations is 32 and that of the last 5 observations is 39, then the fifth observation is _____.

(A) 28 (B) 31 (C) 43 (D) 43

31. The standard deviation of first 10 natural numbers is:

(A) 5.5 (B) 3.87 (C) 2.97 (D) 2.97

32. Choose the correct answer.
Consider the first 10 positive integers. If we multiply each number by -1 and then add 1 to each number, the variance of the numbers so obtained is:

(A) 8.25 (B) 6.5 (C) 3.87 (D) 3.87

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33. If the mean of x + 2, 2x+ 3, 3x + 4, 4x + 5 is x + 2 then x is equal to:

(A) 0 (B) 1 (C) -1 (D) -1

34. The average age of 6 students is 11 years. If two more students of age 14 and 16 years join, their average will become

(A) 13 years (B) 12 years (C) $12\frac{1}{2}$ years (D) $12\frac{1}{2}$ years

35. Mode of the distribution is that value of the variate for which the_____is_____.

(A) frequency, maximum (B) Frequency, minimum

(C) frequency, arithmetic mean (D) frequency, arithmetic mean

36. The average of the first five odd prime numbers is:

(A) 7 (B) 7.8 (C) 8 (D) 8

37. The wickets taken by a bowler in a one day cricket match are 4, 5, 6, 3, 4, 0, 3, 2, 3, 5. The mode of the data is _____ .

(A) 3 (B) 4 (C) 5 (D) 5

38. Mean of twenty observations is 15. It two observations 3 and 14 are replaced by 8 and 9 respectively, then the new mean will be:

(A) 14 (B) 15 (C) 16 (D) 16

39. The average weight of 20 students was calculated 70kg. It was later discovered that one weight was misread as 70 instead of 90, the correct average in kg is

(A) 80 (B) 72 (C) 75 (D) 75

40. If for a sample of size 60, we have the following information $\sum x_i^2 = 18000$ and $\sum x_i = 960$ then the variance is:

(A) 6.63 (B) 16 (C) 22 (D) 22

41. The average age of two brothers is 9 years It is increased by 9 years when their mothers age is also included then the age of mother is:

(A) 35 years (B) 36 years (C) 37 years (D) 37 years

42. A grocer has a sale of Rs. 6435, Rs. 6927, Rs. 6855, Rs. 7230 and Rs. 6562Rs. for 5 consecutive months. How much sale must he have in the sixth month so that he gets an average sale of Rs. 6500?

(A) Rs. 4991 (B) Rs. 5991 (C) Rs. 6001 (D) Rs. 6001

43. In a factory, the average salary of the employees is Rs. 70. If the average salary of 12 officers is Rs. 400 and that of the remaining employees is Rs. 60, then the number of employees are .....

(A) 396 (B) 400 (C) 408 (D) 408

44. The mean of 6 numbers is 42 If one number is excluded, the mean of remaining numbers is 45. Find the excluded number:

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(A) 27 (B) 25 (C) 30 (D) 30

45. The mean of 20 observations is 15 On checking it was found that the two observations were wrongly copied as 3 and 6. The correct values are 8 and 4 , then correct mean will be given by:

(A) 15.15 (B) 14.69 (C) 14.74 (D) 14.74

46. Choose the correct answer.
Following are the marks obtained by 9 students in a mathematics test: 50, 69, 20, 33, 53, 39, 40, 65, 59 The mean deviation from the median is:

(A) 9 (B) 10.5 (C) 12.67 (D) 12.67

47. For a frequency distribution standard deviation is computed by applying the formula:

(A) $\sigma = \sqrt{\frac{\sum fd^2}{\sum f} - \left(\frac{\sum fd}{\sum f}\right)^2}$ (B) $\sigma = \sqrt{\left(\frac{\sum fd}{\sum f}\right)^2 - \frac{\sum fd^2}{\sum f}}$

(C) $\sigma = \sqrt{\frac{\sum fd^2}{\sum f} - \frac{\sum fd}{\sum f}}$ (D) $\sigma = \sqrt{\frac{\sum fd^2}{\sum f} - \frac{\sum fd}{\sum f}}$

48. A school has 20 teachers one of them retires at the age of 60 years and a new teacher replaces him this change reduces the average age of the staff by 2 years the age of new teacher is:

(A) 28 years (B) 25 years (C) 20 years (D) 20 years

49. Two high school classes took the same test. One class of 20 students made an average grade of 80%; the other class of 30 students made an average grade of 70%. The average grade for all students in both classes is:

(A) 75% (B) 74% (C) 77% (D) 77%

50. The captain of a cricket team of 11 members is 26 years old and the wicket keeper is 3 years older. If the ages of these two are excluded, the average age of the remaining players is one year less than the average age of the whole team. What is the average age of the team?

(A) 23 years (B) 24 years (C) 25 years (D) 25 years

51. A child says that the median of 3, 14, 18, 20, 5 is 18. What concept does the child missed about finding the median?

(A) The order of numbers. (B) 14 (C) 18 (D) 18

52. The most frequent value in a data set is?

(A) Median (B) Mode (C) Arithmetic mean (D) Arithmetic mean

53. The average of four consecutive even numbers is one fourth of the sum of these numbers. What is the difference between the first and last number?

(A) 4 (B) 6 (C) 2 (D) 2

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54. The average age of a teacher and three students is 20 years. If all students are of equal age and the difference between the age of the teacher and that of a student is 20 years, then the age of the teacher is:

(A) 25 years (B) 30 years (C) 35 years (D) 35 years

55. Choose the correct answer.

Let x_1, x_2, x_3, x_4, x_5 be the observations with mean m and standard deviation s. The standard deviation of the observations kx_1, kx_2, kx_3, kx_4, kx_5 is:

(A) k + s (B) $\frac{s}{k}$ (C) ks (D) ks

56. On Thursday, 20 of the 25 students in a chemistry class took a test and their average (arithmetic mean) was 80. On Friday, the other 5 students took the test and their average (arithmetic mean) was 90. What was the average for the entire class?

(A) 82 (B) 83 (C) 84 (D) 84

57. The standard deviation of the data:

x	1	a	a^2	....	a^n
f	${}^nC_0$	${}^nC_1$	${}^nC_2$	....	${}^nC_2$

is,

(A) $\left(\frac{1+a^2}{2}\right)^n - \left(\frac{1+a}{2}\right)^n$ (B) $\left(\frac{1+a^2}{2}\right)^{2n} - \left(\frac{1+a}{2}\right)^n$

(C) $\left(\frac{1+a^2}{2}\right)^{2n} - \left(\frac{1+a^2}{2}\right)^n$ (D) $\left(\frac{1+a^2}{2}\right)^{2n} - \left(\frac{1+a^2}{2}\right)^n$

58. The mean of 5 numbers is 18. If one number is excluded, their mean becomes 16. Then the excluded number is

(A) 18 (B) 25 (C) 26 (D) 30

59. Mean of 100 items is 49. It was discovered that three items which should have been $60, 70, 80$ were wrongly read as $40, 20, 50$ respectively. The correct mean is

(A) 48 (B) $82\frac{1}{2}$ (C) 50 (D) 80

60. The $S.D.$ of 5 scores $1, 2, 3, 4, 5$ is

(A) $\frac{2}{5}$ (B) $\frac{3}{5}$ (C) $\sqrt{2}$ (D) $\sqrt{3}$

61. If mean deviations about median of x , $2x$, $3x$, $4x$, $5x$, $6x$, $7x$, $8x$, $9x$, $10x$ is 30 , then $|x|$ equals

(A) 12 (B) 11 (C) 10 (D) 9

62. If the mean of the numbers $27+x$, $31+x$, $89+x$, $107+x$, $156+x$ is 82, then the mean of $130+x$, $126+x$, $68+x$, $50+x$, $1+x$ is

(A) 75 (B) 157 (C) 82 (D) 80

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63. The number of observations in a group is 40. If the average of first 10 is 4.5 and that of the remaining 30 is 3.5, then the average of the whole group is

(A) $\frac{1}{5}$ (B) $\frac{15}{4}$ (C) 4 (D) 8

64. In a series of $3n$ observations, if n observations are equal a and remaining observations are equal $-2a$, then the mean deviation of observations about their mean will be:-

(A) 0 (B) $\frac{a}{3}$ (C) $\frac{4a}{3}$ (D) $4a$

65. The mean deviation of the numbers $3,4,5,6,7$ is

(A) 0 (B) 1.2 (C) 5 (D) 25

66. In a given frequency distribution, the respective values of mean and median are 21 and 22 . The value of mode is

(A) 21.5 (B) 22 (C) 23.5 (D) 24

67. If the algebraic sum of deviations of 20 observations from 30 is 20, then the mean of observations is

(A) 30 (B) 30.1 (C) 29 (D) 31

68. The mean of 10 terms is 3 . If the first term is increased by 1 , second by 2 and so on, then the new mean is

(A) 4 (B) $\frac{17}{2}$ (C) 8 (D) $\frac{11}{2}$

69. The following data gives the distribution of height of studentsThe median of the distribution is

Height (in **cm**)	160	150	152	161	156	154	155
No of students	12	8	4	4	3	3	7

(A) 154 (B) 155 (C) 160 (D) 161

70. Mean of 100 observations is 45. It was later found that two observations 19 and 31 were incorrectly recorded as 91 and 13. The correct mean is...

(A) 44 (B) 44.46 (C) 45 (D) 45.54

71. The mean weight per student in a group of seven students is $55\,kg$ If the individual weights of 6 students are $52,58,55,53,56$ and 54; then weights of the seventh student is.....kg

(A) 55 (B) 60 (C) 57 (D) 50

*** Given section consists of questions of 2 marks each.** **[4]**

72. The mean and standard deviation of 20 observation is found to be 10 and 2 respectively. On rechecking, it was found that observation 8 was incorrect.

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Calculate the correct mean and standard deviation in cases of the wrong items is omitted.

73. The mean and standard deviation of 20 observation are found to be 10 and 2 respectively. On rechecking, it was found that an observation 8 was incorrect. Calculate the correct mean and standard deviation in cases of it is replaced by 12 .

*** Given section consists of questions of 3 marks each.** **[60]**

74. Find the mean deviation about the median for the data in: 13, 17, 16, 14, 11, 13, 10, 16, 11, 18, 12, 17.

75. Find the mean deviation about the median for the data in: 36, 72, 46, 60, 45, 53, 46, 51, 49,42

76. Find the mean deviation about the median for the data

x_i	5	7	9	10	12	15
f_i	8	6	2	2	2	6

77. Find the mean deviation from the median for the following data:

x_i	15	21	27	30	35
fi	3	5	6	7	8

78. Find the mean deviation about the median for the following data.

x_i	3	6	9	12	13	15	21	22
f_i	3	4	5	2	4	5	4	3

79. Calculate the mean deviation about median for the following data.

Class	0-10	10-20	20-30	30-40	40-50	50-60
frequency	6	7	15	16	4	2

80. Find the variance of the following data:
6, 8, 10, 12, 14, 16, 18, 20, 22, 24

81. Find the variance and standard deviation of the following data.

x_i	4	8	11	17	20	24	32
f_i	3	5	9	5	4	3	1

82. Calculate the mean, variance and standard deviation for the following distribution:

Class	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	3	7	12	15	8	3	2

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83. Two plants A and B of a factory show following results about the number of workers and the wages paid to them:

	Plant A	Plant B
No. of workers	5000	6000
Average monthly wages	₹ 2500	₹ 2500
Variance of distribution of wages	81	100

In which plant A or B is there greater variability in individual wages?

84. Coefficient of variation of the two distributions are 60 and 70 and their standard deviations are 21 and 16 respectively. What are their arithmetic means?

85. The following values are calculated in respect of heights and weights of the students of a section of Class XI:

	Height	Weight
Mean	162.6 cm	52.36 kg
Variance	127.69 cm^2	23.1361 kg^2

Find S.D and check which of them is more variable.

86. The variance of 20 observations is 5. If each observation is multiplied by 2, find the variance of the resulting observations.

87. The mean of 5 observations is 4.4 and their variance is 8.24. If three of the observations are 1, 2 and 6, find the other two observations.

88. If each of the observation $x_1, x_2, ..., x_n$ is increased by a, where a is a negative or positive number, then show that the variance remains unchanged.

89. For the frequency distribution:

x	2	3	4	5	6	7
f	4	9	16	14	11	6

Find the standard distribution.

90. Calculate the mean deviation about the mean of the set of first n natural numbers when n is an even number.

91. Two sets each of 20 observations, have the same standard derivation 5. The first set has a mean 17 and the second a mean 22. Determine the standard deviation of the set obtained by combining the given two sets.

92. If for a distribution $\sum(x-5)=3, \sum(x-5)^2=43$ and the total number of item is 18, find the mean and standard deviation.

93. Find the mean and variance of the frequency distribution given below:

x	$1 \le x < 3$	$3 \le x < 5$	$5 \le x < 7$	$7 \le x < 10$
f	6	4	5	1

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*** Given section consists of questions of 5 marks each.**

94. The mean and variance of eight observations are 9 and 9.25 respectively. If six of the observations are 6, 7, 10, 12, 12 and 13, find the remaining two observations.

95. Find the mean, variance and standard deviation using short cut method.

Height in cm	70-75	75-80	80-85	85-90	90-95	95-100	100-105	105-110	110-115
No. of children	3	4	7	7	15	9	6	6	3

96. The mean and variance of 7 observations are 8 and 16 respectively. If five of the observations are 2, 4, 10, 12, 14 find the remaining two observations.

97. The mean and standard deviation of marks obtained by 50 students of a class in three subjects, Mathematics, Physics and Chemistry are given below:

Subject	Mathematics	Physics	Chemistry
Mean	42	32	40.9
Standard deviation	12	15	20

Which of these three subjects shows the highest variability in marks and which shows the lowest?

98. The mean and standard deviation of a group of 100 observation were found to be 20 and 3 respectively. Later on it was found that three observations were incorrect, which were recorded as 21, 21 and 18. Find the mean and standard deviation if the incorrect observations are omitted.

99. The mean and standard deviation of 100 observation were calculated as 40 and 5.1 respectively by a student who took by mistake 50 instead of 40 for one observation. What are the correct mean and standard deviation?

100. The mean and standard deviation of a group of 100 observations were found to be 20 and 3 respectively. Later on it was found that three observation were incorrect, which were recorded as 21, 21 and 18. Find the mean and standard deviation if the incorrect observation were omitted.

101. The mean and variance of 8 observation are 9 and 9.25 respectively. If six of the observation are 6, 7, 10, 12, 12 and 13, find the remaining two observation.

102. Find the numberof observation lying between $\overline{X} - \text{M.D.}$ and $\overline{X} + \text{M.D.}$ is the mean deviation from the mean.
22, 24, 30, 27, 29, 31, 25, 28, 41, 42

103. The mean and standard deviation of 6 observation are 8 and 4 respectively. If each observation is multiplied by 3, find the new mean and new standard deviation of the resulting observation.

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104. While calculating the mean and variance of 10 readings, a student wrongly used the reading of 52 for the correct reading 25. He obtained the mean and variance as 45 and 16 respectively. Find the correct mean and the variance.

105. Find the numberof observation lying between $\overline{X} - M.D.$ and $\overline{X} - M.D.$ is the mean deviation from the mean.
34, 66, 30, 38, 44, 50, 40, 60, 42, 51

106. Find the standard deviation for the following data:

x	2	3	4	5	6	7
f	4	9	16	14	11	6

107. The mean and standard deviation of 20 observation are found to be 10 and 2 respectively. On reacheking it was found that an observation 8 was incorrect. Calculate the correct and standard deviation in each of the following cases:
    i. If wrong item is omitted.
    ii. If it is replaced by 12.

108. The variance of 20 observation is 5. If each observation is multiplied by 2, find the variance of the resulting observation.

109. Calculate the mean deviation about the median of the following observation:
22, 24, 30, 27, 29, 31, 25, 28, 41, 42

110. For a group of 200 candidates, the mean and standard deviations of scores were found to be 40 and 15 respectively. Later on it was discovered that the scores of 43 and 35 were misread as 34 and 53 respectively. Find the correct mean and standard deviation.

111. Determine the mean and standard deviation for the following distribution:

Marks	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Frequency	1	6	6	8	8	2	2	3	0	2	1	0	0	0	1

112. The mean and standard deviation of some data for the time taken to complete a test are calculated with the following results: Number of observations = 25, mean = 18.2 seconds, standard deviation = 3.25 seconds. Further, another set of 15 observations x_1, x_2, ..., x_{15}, also in seconds, is now available and we have $\sum_{i=1}^{15} x_i = 279$ and $\sum_{i=1}^{15} x_i^2 = 5524$. Calculate the standard derivation based on all 40 observations.

113. While calculating the mean and variance of 10 readings, a student wrongly used the reading 52 for the correct reading 25. He obtained the mean and variance as 45 and 16 respectively. Find the correct mean and the variance.

114. The mean life of a sample of 60 bulbs was 650 hours and the standard deviation was 8 hours. A second sample of 80 bulbs has a mean life of 660 hours and

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standard deviation 7 hours. Find the overall standard deviation.

115. Calculate the mean deviation about the mean of the set of first n natural numbers when n is an odd number.

116. Mean and standard deviation of 100 observations were found to be 40 and 10, respectively. If at the time of calculation two observations were wrongly taken as 30 and 70 in place of 3 and 27 respectively, find the correct standard deviation.

----- CSC- Choose the goal ,stick on it and complete it -----

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