

UNIT TEST – 11

STD : X
SUBJECT : MATHS

TIME : 1 ½ Hrs
MARKS : 50

STATISTICS
SECTION – I

10 x 1 =10

NOTE: (i) Answer all the 10 questions

(ii) Choose the correct answer from the given four alternatives and write the option code and the corresponding answer

1. The range of the first 10 prime numbers 2,3,5,7,11,13,17,19,23,29 is
a) 28 b) 26 c) 29 d) 27
2. The greatest value of a collection of data is 72 and the least value is 28 then the coefficient of range is
a) 44 b) 0.72 c) 0.44 d) 0.28
3. For a collection of 11 items, $\Sigma x = 132$, then the arithmetic mean is
a) 11 b) 12 c) 14 d) 13
4. For any collection of n items, $(\Sigma x) - \bar{x} =$
a) $n\bar{x}$ b) $(n-2)\bar{x}$ c) $(n-1)\bar{x}$ d) 0
5. If t is the standard deviation of x, y,z then the standard deviation of x + 5, y +5, z+5 is
a) $\frac{t}{3}$ b) t + 5 c) t d) xyz
6. If the standard deviation of a set of data is 1.6, then the variance is
a) 0.4 b) 2.56 c) 1.96 d) 0.04
7. Variance of the first 11 natural numbers is
a) $\sqrt{5}$ b) $\sqrt{10}$ c) $5\sqrt{2}$ d) 10
8. The variance of 10,10,10,10,10 is
a) 10 b) $\sqrt{10}$ c) 5 d) 0
9. Standard deviation of a collection of data is $2\sqrt{2}$. If each value is multiplied by 3 then the standard deviation of the new data is
a) $\sqrt{12}$ b) $4\sqrt{2}$ c) $6\sqrt{2}$ d) $9\sqrt{2}$
10. Given $\Sigma (x - \bar{x})^2 = 48$, $\bar{x} = 20$ and n = 12, the coefficient of variation is
a) 25 b) 20 c) 30 d) 10

SECTION – II

5 x 2 =10

NOTE: (i) Answer 5 questions

(ii) Question number 17 is compulsory. Select any 4 questions from the first 6 questions

11. The weight (in kg) of 13 students in a class are 42.5, 47.5, 48.6, 50.5, 49, 46.2, 49.8, 45.8, 43.2, 48, 44.7, 46.9, 42.4. Find the range and coefficient of range.
12. The largest value in a collection of data is 7.44. If the range is 2.26, then find the smallest value in collection.
13. Find the standard Deviation of first 10 natural numbers.
14. The smallest value of a collection of data is 12 and the range is 59. Find the largest value of the collection of data.
15. The standard deviation of 20 observations is $\sqrt{5}$. If each observation is multiplied by 2, find the standard deviation and variance of the resulting observations.
16. A group of 100 candidates have their average height 163.8 cm with coefficient of variation 3.2. What is the standard deviation of their heights?
17. If the coefficient of variation of a collection of data is 57 and its S.D is 6.84, then find the mean.

(OR)

If $n=10$, $\bar{x} = 12$ and $\sum x^2=1530$, then calculate the coefficient of variation.

SECTION – III

6 x 5 =30

NOTE: (i) Answer 6 questions

(ii) Question number 25 is compulsory. Select any 5 questions from the first 7 questions

18. Find the standard deviation of the data. 62, 58, 53, 50, 63, 52, 55.
19. The following table shows the marks obtained by 48 students in a Quiz competition in Mathematics. Calculate the standard deviation.

Data (x)	6	7	8	9	10	11	12
Frequency f	3	6	9	13	8	5	4

20.The following table gives the number of goals scored by 71 leading players in international football matches. Find the standard deviation of the data.

Class Interval	0–10	10–20	20–30	30–40	40–50	50–60	60–70
Frequency	8	12	17	14	9	7	4

21.The mean and the standard deviation of a group of 20 items was found to be 40 and 15 respectively. While checking it was found that an item 43 was wrongly written as 53. Calculate the correct mean and standard deviation.

22.Find the standard deviation of the data. 10, 20, 15, 8, 3, 4.

23.Mean of 100 items is 48 and their standard deviation is 10. Find the sum of all the items and the sum of the squares of all the items.

24.Given $\Sigma x = 99$, $n = 9$ and $\Sigma(x-10)^2 = 79$, find Σx^2 and $\Sigma(x-\bar{x})^2$.

25.Calculate the standard deviation of the following data.

x	3	8	13	18	23
f	7	10	15	10	8

(OR)

Prove that the standard deviation of the first n natural numbers is $\sigma = \sqrt{\frac{n^2-1}{12}}$