JEE MAIN : CHAPTER WISE TEST PAPER-12

SUBJECT :- MATHEMATICS **DATE.....**
CLASS :- 11th **NAME.....**
CHAPTER :- STATISTICES **SECTION.....**

(SECTION-A)

1. The average weight of 9 men is x kg. After another men joins the group, the average increases by 5%. Still another man joins and average returns to old level of x kg. Which one of the following true?
(A) the 10th & 11th men weight same
(B) the 10th man weight half as much as the 11th man
(C) the 10th man weight as much as the 11th man
(D) None of these

2. N observations on a variable x are $x_i = A + iB$ for i = 1, 2, 3, ..., n where A, B are real constants. The mean of the observation is

(A) $A + B\frac{(n+1)}{2}$ (B) $nA + B\frac{(n+1)}{2}$

(C) $A + Bn\frac{(n+1)}{2}$ (D) $A + B\left(\frac{n}{2}\right)$

3. If a variable takes the discrete values $\alpha + 4, \alpha - \frac{7}{2}, \alpha - \frac{5}{2}, \alpha - 3, \alpha - 2, \alpha + \frac{1}{2}, \alpha - \frac{1}{2}, \alpha + 5$ ($\alpha > 0$), then the median is

(A) $\alpha - \frac{5}{4}$ (B) $\alpha - \frac{1}{2}$

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

4. $M(x_1, x_2, x_3 \ldots\ldots\ldots x_n)$ defines a measure of central tendency based on n values $x_1, x_2, x_3, \ldots\ldots\ldots x_n$ consider the following measured of central tendency
(1) Arithmetic mean
(2) Median
(3) Geometric mean
which of the above measure satisfie/ satisfies the property

$$\frac{M(x_1, x_2, x_3 \ldots\ldots\ldots x_n)}{M(y_1, y_2, y_3 \ldots\ldots\ldots y_n)}$$

$$= M.\left(\frac{x_1}{y_1}, \frac{x_2}{y_2}, \frac{x_3}{y_3}, \ldots\ldots, \frac{x_n}{y_n}\right)?$$

select the correct answer using the code below
(A) 1 only (B) 2 only (C) 3 only (D) 1 and 3

5. Mean of variates 1.2.3, 2.3.4, ..., n(n + 1)(n + 2)

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

(B) $\frac{(n+1)(n+2)(n+3)}{2}$

(C) $\frac{(n+1)(n+2)(n+3)}{4}$

(D) $\frac{n(n+1)(n+3)}{2}$

6. Coefficient of range 5, 2, 3, 4, 6, 8, 10 is

(A) $\frac{2}{3}$ (B) $\frac{1}{3}$ (C) $\frac{3}{5}$ (D) $\frac{1}{2}$

7. The scores of a batsman in ten innings are : 38, 70, 48, 34, 42, 55, 63, 46, 54, 44. Find the mean deviation about median.

(A) $\frac{43}{5}$ (B) $\frac{44}{5}$ (C) $\frac{41}{5}$ (D) $\frac{42}{5}$

8. The mean deviation from mean of the observations a, a + d, a + 2d, ... a + 2nd is

(A) $\frac{n(n+1)d^2}{3}$ (B) $\frac{n(n+1)}{2}d^2$

(C) $a + \frac{n(n+1)d^2}{2}$ (D) $\frac{n(n+1)\,|\,d\,|}{(2n+1)}$

9. The mean of distribution is 4 if coefficient of variation is 58%. Then standard deviation of distribution is
(A) 2.23 (B) 3.23 (C) 2.32 (D) 2.75

10. The sum of squares of deviations for 10 observations taken from mean 50 is 250. The co-efficient of variation is
(A) 50% (B) 10% (C) 40% (D) 30%

11. What is standard deviation of the set of observations 32, 28, 29, 30, 31?
(A) 1.6 (B) $\sqrt{2}$
(C) 2 (D) None of these

12. Find the arithmetic mean of ${}^{2n+1}C_0$, ${}^{2n+1}C_1$, ... ${}^{2n+1}C_n$.

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

(C) $\frac{2^{n+1}}{n+1}$ (D) None of these

13. A variable takes the values of 0, 1, 2, ... , n with frequencies proportional to the binomial coefficients ${}^nC_0$, ${}^nC_1$, ${}^nC_2$, ... , ${}^nC_n$, then mean of the distribution is

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

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

14. Following is the record of goals scored by team A in football session

Numbers of goals scored				
0	1	2	3	4
Numbers of match is				
1	9	7	5	3

for team 'B' mean number of goals scored per match was 2 goals with standard deviation 1.25 . The team which is more consistant

(A) A
(B) B
(C) A and B both are same
(D) Neither A nor B

15. The mean of two samples of sizes 200 and 300 were found to be 25, 10 respectively. Their standard deviations were 3 and 4 respectively. Find the variance of combined sample of size 500

(A) 70 (B) 60 (C) 67.2 (D) 80

16. The average marks of 10 students in a class was 60 with standard deviation 4. While the average marks of other 10 students was 40 with a standard deviation 6. If all the 20 students are taken together, their standard deviation will be

(A) 5.0 (B) 7.5 (C) 9.8 (D) 11.2

17. The mean and variance of 10 numbers were calculated as 11.3 and 3.3 respectively. It was subsequently found that one of the a number was misread as 10 instead of 12. How does the variance change.

(A) variance decreases
(B) variance increases
(C) nothing can be said about variance
(D) variance remains unchanged.

18. In a set of 4n distinct observations, each of the observation below the median is increased by 12 and each of the remaining observations is decreased by 4, then the mean of the new set is

(A) increased by 4 (B) decreased by 4
(C) increased by 2 (D) decreased by 2

19. The mean of five observations is 4 and their variance is 5.2. If three of these observations are 1, 2 and 6. Then the other two are

(A) 2 and 9 (B) 3 and 8
(C) 4 and 7 (D) 5 and 7

20. The mean of five observations is 4 and their variance is 5.2. It three of these observation are 1,2 and 6 then the other two are

(A) 2 and 9 (B) 3 and 8
(C) 4 and 7 (D) 5 and 6

(SECTION-B)

21. The mean of 21 observations (all different) is 40. If each observations greater than the median are increased 21, then mean of observations will become

22. If the difference between mean and mode is 63, the difference between mean and median is

23. The mean deviation about median of variates 13, 14, 15, ... , 99, 100 is

24. Mean deviation from the mean for the observations – 1, 0, 4 is

25. If the algebraic sum of deviations of 20 observation from 30 is 20, then the mean of the observation is

26. The mean & variance of 7 observations are 8, 16 respectively. If 5 of the observations are 2, 4, 10, 12, 14, then the LCM of remaining two observations is

27. The first of the two samples has 100 items with mean 15 and S.D. 3. If the whole group has 250 items with mean 15.6 and S.D. = $\sqrt{13.44}$ then S.D. of the second group is

28. The mean and variance of 5 observations of an experiment are 4 and 5.2 respectively. From these observations three are 1, 2 and 6 and $\lambda = |x_1 - x_2| + 8$ where x_1 & x_2 are remaining observations. Then number of solution of equation $10 - x^2 - 2x = \lambda$ are

29. Let x_i , where i = 1, ...n be the roots of n degree polynomial $P(x) = x^n - 14x^{n-1} + 70x^{n-2} + ...$ If the standard deviation of all x_i, i = 1, 2, ... n is 2, then find the number of observation

30. If n = 10, $\bar{x} = \sqrt{12}$, $\sum x^2 = 1560$, then standard deviation σ is