11161 239

STATISTICS
PART-I

NOTE: There are three sections of this paper. Carefully read the instructions for each section and attempt accordingly. Attempt all questions of Section-A and return it to the Superintendent within given time, even if you have not attempted any question. Select the correct choice and write only A, B, C or D, whichever is appropriate, in the answer box. No marks will be awarded for cutting/erasing or overwriting.

SECTION-A

Time: 20 Minutes **Marks:** 18

1. The process of selecting a part out of population is known as ..... A) sample, B) sample space, C) sampling, D) none of these .....

2. Number of items falling in a class interval is called class ..... A) mark, B) frequency, C) width, D) boundary .....

3. When the frequencies are cumulated from the highest value to the lowest value, it is called ..... type cumulative frequency distribution. A) a less than, B) a more than, C) a relative type, D) none .....

4. Coefficient of variation is a/an ..... measure of dispersion. A) absolute, B) comparative, C) relative, D) percentage .....

5. Simple averages locate ..... of the distribution. A) start, B) centre, C) end, D) one fourth .....

6. In a pie-chart the total of the quantities is equal to an angle of ..... degrees. A) 90°, B) 180°, C) 360°, D) none of these .....

7. Histogram is the graph of ..... frequency distribution. A) continuous, B) cumulative, C) relative, D) none of these .....

8. $\Sigma f(x-\bar{x}) =$ ..... A) Σf, B) zero, C) x, D) $\Sigma f(x-\bar{x})^2$ .....

9. Which one of the following is true for a set of variables? A) A.M = G.M = H.M, B) A.M < G.M < H.M, C) A.M > G.M > H.M, D) none of these .....

10. For a set of data percentiles have ..... values. A) 4, B) 10, C) 99, D) 100 .....

11. $Var(x/a) =$ ..... A) $(1/a)\ var(x)$, B) $(1/a^2)\ var(x)$, C) $(a)\ var(x)$, D) $(2/a)\ var(x)$ .....

12. Second moment about mean is equal to ..... A) arithmetic mean, B) mean deviation, C) variance, D) standard deviation .....

13. In a skewed distribution mean, median and mode will be ..... A) equal, B) unequal, C) negative, D) none of these .....

14. $P(A)+P(\bar{A}) =$ ..... A) P(S), B) $P(\phi)$, C) $P(A \cap \bar{A})$, D) zero .....

15. $E(x-y) =$ ..... A) $E(x)-E(y)$, B) $E(x)+E(y)$, C) $E(x).E(y)$, D) $E(x) \pm E(y)$ .....

16. For a random variable x, if $E(x^2)=6$ and $var(x)=5$, then mean = ... A) 30, B) 11, C) 1, D) none .....

17. Number of parameters of hypergeometric distribution are ..... A) 4, B) 3, C) 2, D) 1 .....

18. Harmonic mean of a series of values is the reciprocal of the ..... of the reciprocal of the values of items. A) A.M, B) G.M, C) median, D) observations .....

STATISTICS
PART-I

Time: 2 Hours 40 Minutes

SECTION-B

Marks: 40

1. Attempt any ten of the following. All carry equal marks.

i. Differentiate between descriptive and inferential statistics. Give examples.

ii. A set of data consists of 3 distributions with observations 45, 39 and 53 having there mean 2, 1.5 and 5 respectively. Find the mean of the whole set of data.

iii. Calculate A.M, G.M and H.M from the data: x=22, 21, 0, 20

iv. Given :

	Mean	Standard deviation
Doctors salaries	20000	6500
Peons salaries	900	250

Are doctor's salaries more consistent than those of peon's?

v. The first four central moments are 0, 4, 8 and 144. Examine the skewness and kurtosis.

vi. Distinguish between absolute and relative dispersion.

vii. Compute the price relatives taking 1988 as base:

Years:	1988	1989	1990	1991	1992	1993	1994	1995	1996
Prices of wheat:	5	5.5	6	6.5	7	7.5	8	8.5	9

viii. Define and explain random experiment.

ix. Find the value of y from the following probability distribution of a random variable x.

x:	1	2	3	4	5
P(x):	0.1	0.2	y	0.2	0.1

x. Let x is a continuous random variable. Check whether the following is a density function.
$f(x) = 1/30(5+2x) \quad 1<x<4$

xi. Prove that the mean of binomial distribution is np.

xii. If x is a binomial random variable with n=20 and p=0.5. Find the coefficient of variation.

xiii. Find the mean and variance of the hypergeometric distribution h(x,9,5,4).

SECTION-C

Marks: 27

NOTE: Attempt any three of the following questions. All questions carry equal marks.

2. Compare the budgets of families A and B with the help of rectangular diagram.

Items of Expenditure	Expenses in Rs.	
	Family A	Family B
Food	480	1200
Clothings	80	240
Education	80	360
Fuel	40	200
Miscellaneous	120	400

3. Compute mean deviation from the (i) mean and (ii) median. Also determine its coefficients.

Marks:	0-10	11-21	22-32	33-43	44-54	55-65	66-76	77-87
No. of students:	3	7	21	17	10	9	4	1

4. State and prove addition law of probability for not mutually exclusive events.

5. Find complete probability distribution of the binomial experiment defined by n=4 and P=1/3