

ID: 14269

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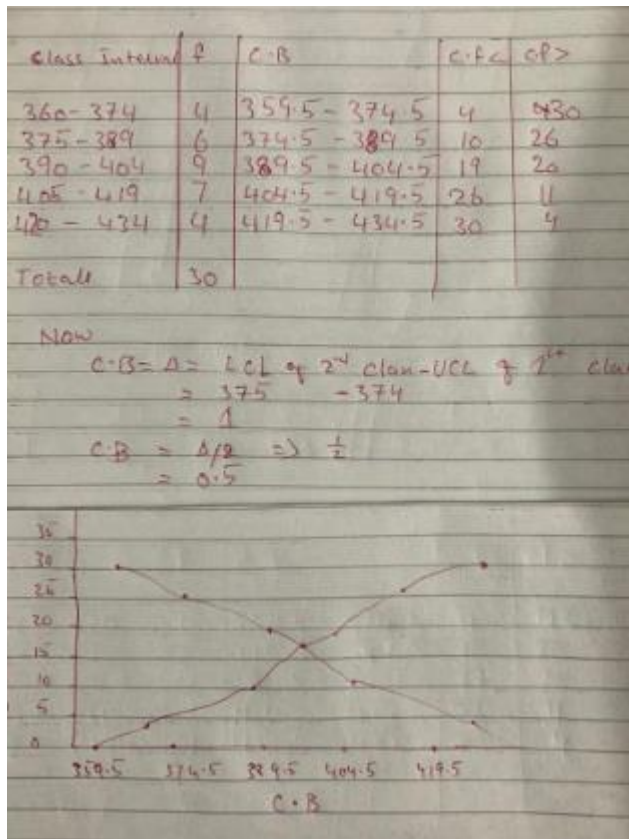
DEP: BS(SE)

Note: Please attempt all Questions in sequence. All questions carry equal marks.

(30)

Q1: Construct a grouped frequency distribution table and cumulative frequency curve (Ogive) for the observations below.

423, 369, 387, 411, 393, 394, 371, 377, 389, 409, 392, 408, 431, 401, 363, 391, 405, 382, 400, 381, 399, 415, 428, 422, 396, 372, 410, 419, 386, 390



Q2: For the observations given in **Q1** calculate Mean and Geometric Mean.

Class Interval	f	C.B	x	(f _i × log x)	f log x
360 - 374	4	359.5	367	1468	10.24
375 - 389	6	374.5	382	2292	15.48
390 - 404	9	394.5	399	3577	23.31
405 - 419	7	404.5	412	2884	19.27
420 - 434	4	419.5	427	1708	10.52
Total 30					
Now					
Finding mean:					
$\text{mean} = \frac{\sum f \cdot \text{mid}}{\sum f}$ $= \frac{11925}{30}$ $\text{Mean} = 397.5$					
Now					
Finding Geometric Mean:					
$\text{Geometric mean} = \text{anti log} \left(\frac{\sum f \log (x)}{\sum f} \right)$ $= \text{Anti log} \left(\frac{77.82}{30} \right)$ $= \text{Anti log} (2.594)$ $\text{G.M} = 392.6$					

Q3: Define the following terms

a) Population and Sample

Population:

- A population or a statistical population is a collection or set of all possible observations whether finite or infinite, relevant to some characteristics of interest.
- A statistical population may be real such as the heights of all the college students or hypothetical such as all the possible outcomes from the toss of a coin.
- The number of observations in a finite population is called the size of the population denoted by the letter "N".

Sample:

- A sample is a part or a subset of a population. The number of observations included in a sample is called the size of the sample and is denoted by the letter "n".
- The information derived from a sample data is used to draw conclusions about the population

b) The Range

The range, the difference between the largest value and the smallest value, is the simplest measure of variability in the data. The range is determined by only the two extreme data values. The variance (s^2) and the standard deviation (s). For example In $\{4, 6, 9, 3, 7\}$ the lowest value is 3, and the highest is 9, so the range is $9 - 3 = 6$. Range can also mean all the output values of a function.

c) The Weighted Arithmetic Mean

The weighted arithmetic mean, denoted by X_w of a set on n values X_1, X_2, \dots, X_n with corresponding weights W_1, W_2, \dots, W_n is defined as

$$X_w = \frac{x_1 w_1 + x_2 w_2 + \dots + x_n w_n}{w_1 + w_2 + \dots + w_n}$$

$w_1 w_2 + \dots + w_n$

$\sum x_i w_i \quad (i = 1, 2, 3, \dots, n)$

$\sum w_i$

Good Luck