



# Elements Of Statistics

## Class-BCA III Semester



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**OUTLINE:-**

**UNIT-I**

**FREQUENCY DISTRIBUTION-**

**Cumulative frequency**

**Inclusive and exclusive frequency**

**Continuous and discontinuos frequency**

# Some More Definitions

- **Raw Data:** Data collected in original form.
- **Classes / class intervals:** Subgroups within a set of collected data. Ex.10-20,20-30 etc
- **Width of class-interval = upper limit – lower limit**
- **Mid – Value =  $(U.L + L.L)/2$**
- **Frequency:** The number of times a certain value or class of values occurs.
- **Frequency Distribution Table:** The organization of raw data into table form using classes and frequencies.





## More Definitions

- **Cumulative Frequency of a class is the sum of the frequency of that class and the frequencies of all the preceding or succeeding classes which are listed in some sensible order (numerical order, alphabetical order, etc.)**

## Illustration – Individual Series



- Marks of ten students of a class in Statistics  
15, 35, 55, 67, 78, 84, 79, 90, 89, 94



# Illustration – Discrete Frequency Distribution

Height (in inches)	No. of Students
60	12
62	18
64	10
66	6
68	4

## Illustration – Individual Series



- Marks of ten students of a class in Statistics  
15, 35, 55, 67, 78, 84, 79, 90, 89, 94

# Illustration – Grouped or Continuous Frequency Distribution



- Exclusive Type Class – Intervals

Class-Intervals	Frequency
20-25	8
25-30	2
30-35	40
35-40	23
40-45	9





## Illustration – Grouped or Continuous Frequency Distribution contd...

- Inclusive Type Class - Intervals

Class-Intervals	Frequency
1-10	2
11-20	6
21-30	10
31-40	15
41-50	12



# CONVERSION OF INCLUSIVE TYPE CLASS-INTERVALS TO EXCLUSIVE TYPE CLASS INTERVALS

- Calculate **ADJUSTMENT FACTOR** as follows:

$$A.F = \frac{\text{Lower Limit of Next C.I} - \text{Upper Limit of Previous C.I}}{2}$$

using the given inclusive type class intervals.

2. Obtain new class intervals as follows:

$$\text{New Lower Limit} = \text{Old Lower limit} - A.F$$

$$\text{New Upper Limit} = \text{Old Upper Limit} + A.F$$

# CONVERSION OF INCLUSIVE TYPE CLASS-INTERVALS TO EXCLUSIVE TYPE CLASS INTERVALS contd...



Class-Intervals	Frequency
1-10	2
11-20	6
21-30	10
31-40	15
41-50	12

- $A.F = (11 - 10)/2$   
 $= 0.5$

For 1<sup>st</sup> C.I i.e 1-10

$$\text{New L.L} = 1(\text{old L.L}) - 0.5$$
$$= 0.5$$

$$\text{New U.L} = 10(\text{old U.L}) + 0.5$$
$$= 10.5$$

And so on.

## CONVERSION OF INCLUSIVE TYPE CLASS-INTERVALS TO EXCLUSIVE TYPE CLASS INTERVALS contd...



Class-Intervals	Frequency
0.5-10.5	2
10.5-20.5	6
20.5-30.5	10
30.5-40.5	15
40.5-50.5	12



Now calculations can be made.

# Obtaining Cumulative Frequency Distribution



Class -Intervals	Frequency	Less than type	More than type
20-25	15	Cum. frequency $15$	Cum. frequency $60 + 15 = 75$
25-30	34	$15 + 34 = 49$	$26 + 34 = 60$
30-35	6	$49 + 6 = 55$	$20 + 6 = 26$
35-40	10	$55 + 10 = 65$	$10 + 10 = 20$
40-45	8	$65 + 8 = 73$	$2 + 8 = 10$
45-50	2	$73 + 2 = 75$	2

## QUESTIONS:-

1. What is the frequency distribution in statistics?
2. What is cumulative frequency?
3. What is the difference between inclusive and exclusive frequency?

## Reference Books:

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Thanks