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FACULTY OF ENGINEERING & TECHNOLOGY

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LECTURE- 4

BSc (AG)
2nd Year , IIIrd Sem.
Statistical Methods
AES-213

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Outline of lecture

- Graphical Representation of data
- Some points to Remember
- General rules of Graphic Presentation of data & Information
- Merits of Graph
- Limitations of Graph
- Test Your Skills (Questions based on Lecture)
- Suggested Readings & References

Some points to remember

❖We measure the distance of the point from the Y-axis along the X-axis. Similarly, we measure the distance of the point from the X-axis along the Y-axis. Therefore, to measure 3 units from the Y-axis, we move 3 units along the X-axis and likewise for the other coordinate.

❖We then draw perpendicular lines from these two points.

❖The point where the perpendiculars intersect is the position of the point P.

❖We denote it as follows (3,5) or (abscissa, ordinate). Together, they are the coordinates of the point P.

❖The four parts of the plane are Quadrants.

❖Also, we can plot different points for a different pair of values.

General Rules for Graphic Presentation of Data and Information:

There are certain guidelines for an attractive and effective graphic presentation of data and information. These are as follows:

1. **Suitable Title** – Ensure that you give a suitable title to the graph which clearly indicates the subject for which you are presenting it.
2. **Unit of Measurement** – Clearly state the unit of measurement below the title.
3. **Suitable Scale** – Choose a suitable scale so that you can represent the entire data in an accurate manner.
4. **Index** – Include a brief index which explains the different colors and shades, lines and designs that you have used in the graph. Also, include a scale of interpretation for better understanding.
5. **Data Sources** – Wherever possible, include the sources of information at the bottom of the graph.
6. **Keep it Simple** – You should construct a graph which even a layman (without any exposure in the areas of statistics or mathematics) can understand.
7. **Neat** – A graph is a visual aid for the presentation of data and information. Therefore, you must keep it neat and attractive. Choose the right size, right lettering, and appropriate lines, colors, dashes, etc.

Merits of a Graph

- The graph presents data in a manner which is easier to understand.
- It allows us to present statistical data in an attractive manner as compared to tables. Users can understand the main features, trends, and fluctuations of the data at a glance.
- A graph saves time.
- It allows the viewer to compare data relating to two different time-periods or regions.
- The viewer does not require prior knowledge of mathematics or statistics to understand a graph.
- We can use a graph to locate the mode, median, and mean values of the data.
- It is useful in forecasting, interpolation, and extrapolation of data.

Limitations of a Graph

- A graph lacks complete accuracy of facts.
- It depicts only a few selected characteristics of the data.
- We cannot use a graph in support of a statement.
- A graph is not a substitute for tables.
- Usually, laymen find it difficult to understand and interpret a graph.
- Typically, a graph shows the unreasonable tendency of the data and the actual values are not clear.

Test Your Skills (Fill in the blanks)

1. Draw the four quadrants in X-Y plane…….
2. What is index ……..
3. Write one merit of graph ……
4. Give one demerits of graph ……

Suggested Readings & References

1) Statistical Methods: P.N. Arora, Sumeet Arora & S. Arora; S. Chand & Company Ltd.

2) Fundamental of Mathematical Statistics: S.C. Gupta & V. Kapoor; Sultan Chand & Sons.

3) Statistics: M.R. Spiegel; Schaum's Outline Series, Mc-Graw Hill Publication.

4) Advanced Engineering Mathematics: Erwin Kreyszig; John Wiley & Sons Inc.

5) Elements of Statistics: J.P. Chauhan & S. Kumar; Krishna Publication.

* THANK YOU *