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FACULTY OF ENGINEERING & TECHNOLOGY

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LECTURE- 11

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

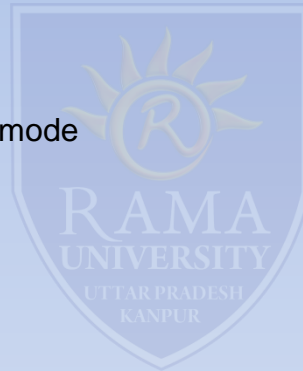


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Outline of Lecture

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- Measure of Central Tendency
- Numerical problems on mean, median & mode
- Type I & Type II problems
- Suggested Readings & References



Numerical problems based on Mean, Median & Mode

There are three types of numerical problems in mean, median and mode according to the given observations.

- Type I
- Type II
- Type III

We discuss one by one both types.



Measure of Central Tendency

Numerical problems Type I & Type II

Measures of Central Tendency

Mean, Median, Mode.

Type - I

Question:- Find the mean, Median and Mode of the following data.

5, 8, 17, 2, 3, 5, 4, 5.

Answer:- Mean =
$$\frac{5+8+17+2+3+5+4+5}{8}$$
$$= \frac{49}{8}$$
$$= 6.12$$

Median = Arrange numbers in either ascending or descending orders.

2, 3, 4, 5, 5, 5, 8, 17

$$= \frac{5+5}{2}$$
$$= 5$$

Mode = In the above data 5 comes more than other numbers so mode is 5.

Type - II

Question:- Find the mean, median and mode of following frequency table

Mid value (x)	1	2	3	4	5
frequency (f)	2	3	4	7	7

Measure of Central Tendency

Numerical problems Type I & Type II

$$(a) \text{ Mean } (\bar{x}) = \frac{\sum fx}{N}$$

where, $N = \sum f$ or total frequency.

x	f	$f \cdot x$
1	2	2
2	3	6
3	6	18
4	7	28
5	9	45
	27	99
	$\sum f = N$	$\sum fx$

$$\text{So, mean, } \bar{x} = \frac{\sum fx}{N} = \frac{99}{27} = \boxed{3.66}$$

(b) Median

$$N = \sum f = 27$$

$$\frac{N}{2} = \frac{27}{2} = 13.5$$

x	f	cumulative frequency
1	2	2
2	3	5
3	6	11
4	7	18
5	9	27

Suggested Readings & References

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- 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.

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*** THANK YOU ***